



科哈拉水电开发有限公司

KOHALA HYDRO COMPANY (PVT.) LTD

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Ref. No:KHCL-PKO-20170185-A

Date: June 23, 2017

Mr. Abid Latif Lodhi,
Chief Executive Officer,
Central Power Purchasing Agency,
Shaheed-e-Millat Secretariat,
Blue Area, Islamabad.

Subject: Submission of the EPC Stage Tariff Proposal of 1124 MW Kohala Hydro Power Project

Dear Sir,

We are pleased to submit **EPC Stage Tariff Proposal** for **1,124MW Kohala Hydro Power Project** ("the Project") being developed by Kohala Hydro Company (Private) Limited ("the Company"). The Project is the largest private sector hydropower investment and is being developed under China Pakistan Economic Corridor (CPEC) as "Energy Actively Promoted Projects".

The Project is located in the State of Azad Jammu & Kashmir (AJK) on River Jhelum, accordingly, this Tariff Proposal is being submitted to you as "Buyer" for onward submission to NEPRA under Rule 3 of NEPRA (Import of Electric Power) Regulations 2017.

You are requested to accept the Company's Tariff Proposal and submit to NEPRA for the determination of EPC Stage Tariff.

The Tariff Proposal (including its Annexures) is being submitted in triplicate.

Yours sincerely,

Zhang Jun
Chief Executive Officer
Kohala Hydro Company (Private) Limited

Cc: Managing Director, PPIB



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Signature
RECEIVED
CPPA-G, Islamabad
23/6/17

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Signature of Zhang Jun

Zhang Jun
Chief Executive Officer
Kohala Hydro Company (Private) Limited

Dy. General Manager Technical
Central Power Purchasing Agency (G) Ltd.
Islamabad



Cc: Managing Director, PPB



EPC Stage Tariff Proposal

1,124 MW Kohala Hydropower Project

Before

Central Power Purchasing Agency (Guarantee) Limited

June 23, 2017

Table of Contents

Section 01: Details of Applicant.....	1
Section 02: Executive Summary	3
Section 03: Grounds for Tariff Proposal	6
Section 04: Project Background	7
Section 05: The Project	10
Section 06: EPC – Process & Selection	13
Section 07: Project Cost.....	22
Section 08: Funding Arrangement.....	36
Section 09: Operations Cost	38
Section 10: Reference Tariff Table	41
Section 11: Adjustments.....	45
Section 13: Pass through items.....	59
Section 14: General Assumptions	62

Section 01: Details of Applicant

Project Company: Name and Address & Representative

Mr. Zhang Jun,
Chief Executive Officer
Kohala Hydro Company (Private) Limited
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Khayaban-e-Suhrawardy, G-5/1, Islamabad.

Tel: +92-51-8439616
Fax: +92-51-2287188
Website: www.kohalahydro.com
Email: info.kohalahydro@ctgsail.com
Company Registration No: 0095392

Project Sponsors

China Three Gorges South Asia Investment Limited

Project Advisors

Bridge Factor	Tariff Advisors
Joint Venture of Lahmeyer International GmbH & Changjiang Survey, Planning, Design and Research Co. Ltd	Owner's Engineer
Allen & Overy LLP, English Law Lincoln's Law Chamber, Pakistan Law Junhe LLP, Chinese Law	Legal Advisors
Delloite Advisory (Hongkong) Limited	Financial Advisor
KPMG	Tax Advisor
China Water Resources Beifang Investigation, Design and Research Co. LTD (BIDR)	Technical Advisor

Section 02: Executive Summary

Kohala Hydro Company (Pvt) Limited (“KHCL”, the “Company” or “the “Project Company”)) hereby requests Central Power Purchasing Agency (Guarantee) Limited (the “CPPA”) to consider Company’s EPC stage tariff and submit its Power Acquisition Request to NEPRA for Company’s run of the river 1,124 MW Kohala Hydropower Project (the “Project”), located in the State of Azad Jammu & Kashmir (the “AJK”) in accordance with NEPRA (Import of Electric Power) Regulations, 2017 and Policy for Power Generation Projects 2002.

KHCL is an ultimate subsidiary of China Three Gorges Corporation (the “CTG”), which is a State Owned Entity of Government of China, and is one of the largest power companies in the World with an asset base of USD 94.90 billion. Apart from the Project, CTG is also developing two other mega hydro power projects on Jehlum River, namely, the 720 MW Karot Hydropower Project and the 640 MW Mahl Hydropower Project. CTG also has in operation a 50MW wind power project in Jhimpir, Sindh and is setting up two 50MW wind farms also in Jhimpir Sindh. All these projects are/and will be owned by an intermediate subsidiary of CTG called China Three Gorges South Asia Investment Limited (the “CSAIL”), in which the International Finance Corporation of the World Bank Group (the “IFC”) and China Silk Road Fund – owned by Government of China (the “SRF”) have 15% shares each, with CTG holding a large chunk of 70%.

The Project was initially being developed by the Pakistan Water & Power Development Authority (the “WAPDA”), and was offered to Chinese investors/companies during President of Pakistan’s visit to China in October 2008, and an MOU was signed between CTG and GoP in 2008. KHCL was issued an LOI in January 2009, after which it undertook all the necessary studies and obtained the requisite approvals from the concerned Authorities in Pakistan. In April 2015 the National Electric Power Regulatory Authority (the “NEPRA”) determined feasibility stage tariff was PKR 7.0917/ kWh (US Cents 7.2365 / kWh) and subsequently Letter of Support (LOS) was issued by PPIB in December 2015.

In August 2014 the Project was included in the “Actively Promoted Project” in the China-Pakistan Economic Corridor (CPEC) and has the distinction of being the only CPEC project in AJK and Government of Pakistan and Government of People’s Republic of China (the “Government of PRC”) are keen for fast track implementation of this Project.

The Project is being developed downstream of Chakothi-Hattian Hydropower Project and upstream of the Mahl Hydropower Project. It will consist of a Dam on River Jhelum, with twin 17.4 km long headrace tunnels which will end in the power house downstream on the River Jhelum. The curved concrete gravity dam with a crest elevation of 910 m, will have a maximum height of 69 m and a top length of 270 m. The main power station will be equipped with 4 vertical Francis turbine generator units, each with a capacity of 275 MW. An additional 24 MW will run on the ecological flow of the River downstream of the Dam.

A consortium of Yangtze Three Gorges Technology & Economy Development Co. Ltd, & China Three Gorges Project Development Co. Ltd have been selected through international competitive bidding as the EPC Contractor (the “EPC Contractor”), with EPC Contract value of USD 1,793 million.

Due to the complexities involved, construction period will be 6.5 years as approved by Panel of Experts (PoE). The activities of the EPC Contractor will be supervised by JV of Lahmeyer International GmbH, Germany & Changjiang Survey, Planning, Design and Research Co. Ltd, China.

Environmental No Objection Certificate of the Project was awarded by Government of Azad Jammu and Kashmir Environment Protection Agency (“AJK EPA”) on December 22, 2016.

Interconnection Facility will be built by National Transmission and Despatch Company Limited (the “NTDC”) and interconnection scheme for the Complex was approved by NTDC in March 3, 2017.

The Project is estimated to cost USD 2,760.17 Million, and is the largest private sector investment being undertaken in the State of Azad Jammu & Kashmir.

Amongst the many challenges being overcome in its development, some formidable ones are the regional security and political situation, circular debt etc, as well as such serious technical ones as the geological conditions, tunnelling and Dam site being located above a fault which has a high risk of natural disasters. Moreover, KHCL and CSAIL are still pursuing the Government of AJK (the “GOAJK”) to exempt hydropower projects in AJK from General Sales Tax on Construction services (On-shore component of EPC Contract), as it’s a staggering amount of USD 212.79 million, and its incurrence will require massive injection of funds, and raise the end consumer tariff by US Cents 0.86/kWh.

The Project will be financed at a Debt : Equity Ratio of 70:30, as approved during the feasibility stage, and as required by the lenders due to the location and nature of the Project. The Equity to be injected is USD 828.05 Million and Debt shall be USD 1,932.12 million. Since International DFIs will not participate in the lending, as the Project is in AJK, CSAIL has mobilized Chinese Banks and Pakistani Banks under a complex financial arrangement to achieve a successful financial close. Debt is expected to comprise of FCY and LCY loans in the region of USD 1,642.30 million and PKR Equiv. of USD 289.82 million from Chinese and Pakistani lenders. Given the dynamics of the situation, in order to work out an acceptable security structure, both the FCY as well as LCY currency loans will need to be secured for political and commercial risks by Sinosure which is mandatory condition under the Policy.

CTG is actively pursuing the development of this project of national importance for the two countries involved i.e. Pakistan and People’s Republic of China, and looks forward to the continuing support from all the Stakeholders.

Brief characteristics of the Project and EPC Stage tariff proposal are summarized below:

Project Company	Kohala Hydro Company (Private) Limited
Sponsors	China Three Gorges South Asia Investment Limited
Project Location	Dam Site - Siran Village, Power Plant – Barsala, District Muzafarabad, Azad Jammu & Kashmir
Concession Period	30 Years
Construction Period	6.5 Years
Power Purchaser	Central Power Purchasing Agency (CPPA-G)
Project Type	Run of the river
Project Basis	BOOT
Complex	1,124 MW
Auxiliary Consumption	11.24 MW
Net Plant Capacity	1,112.76 MW
Annual Generation	5,149 GWh
Plant Capacity Factor	52.82%
Turbines	4 x 275 MW 2 x 12 MW
Turbine Type	Vertical Francis
Rated Head	292 m
Average Annual Discharge	302 m ³ /s
Reservoir Length	8 Km
Reservoir Capacity	19.90 million m ³
Tunnel Length	2 x 17.4 km
Diversion Tunnel Length	322.8 m
Crest Level	910 masl.
Weir	57 m

Operational water Level	905 m		
Project Cost	Description		M US\$
	EPC Cost		1,793.50
	Reimbursement of WAPDA Cost		8.06
	Engineering & Supervisions		56.89
	Environmental and Ecology		5.76
	Land Acquisition & Resettlement		51.92
	Project Development Cost		77.88
	Insurance during Construction		53.80
	Legal Fees & charges		12.57
	Duties and Taxes		28.51
	O&M Mobilization		14.15
	Financial Fees and Charges		44.16
	Sinosure Fee		191.91
	Interest During Construction		421.05
	Total		2,760.17
Project Financing	Description	Percentage	M US\$
	Debt	70%	1,932.12
	Equity	30%	828.05
	Total	100%	2,760.17
Debt Profile	Description	Percentage	M US\$
	Foreign Debt	85%	1,642.30
	Local Debt	15%	289.82
	Total	100%	1,932.12
Lenders	Foreign Banks: Syndicate led by China Development Bank Local Banks: Syndicate led by Habib Bank Limited		
Financing Terms	Description	Foreign	Local
	Loan Term	18.5 years incl. 6.5 year grace period	18.5 years incl. 6.5 year grace period
	Debt Repayment Installments	Semiannual	Semiannual
	Mark-up rate	6 Month LIBOR + 460 bps	6 Months KIBOR+ 350 bps
Operations Cost	Description		M US\$
	O & M		41.40
	Water Use Charges		20.87
	Insurance Cost		24.21
	Total		86.48
EPC Stage Tariff	US Cents 9.5585/kWh		
Exchange Rate	1 US\$ = PKR 104.85		
Engineering, Procurement & Construction Contract	The consortium of Yangtze Three Gorges Technology & Economy Development Co. Ltd, & China Three Gorges Project Development Co. Ltd		
	International Competitive Bidding (ICB) was carried out for selection and appointment of the EPC Contractors in line with the requirements of International Finance Corporation (IFC), a member of World Bank Group and one of the shareholders in China Three Gorges South Asia Investment Limited. This ICB process was vetted by Owners’ Engineer (JV of Lahemyer International & CSPDR) and a further independent review of EPC proposals was conducted by Mott Macdonald		
Major Milestones Achieved	<ul style="list-style-type: none">▪ LOS from PPIB▪ Appointment of EPC Contractors and Owner’s Engineer through ICB▪ Financing term sheets and Sinosure L.O.I obtained▪ Interconnection Study Approved by NTDC▪ Environmental NOC issued by AJK EPA▪ Section 5A issued for the Project Land		

Section 03: Grounds for Tariff Proposal

3.1 Basis for Tariff Proposal

In order to cater to the unique nature of hydropower plants, wherein cost uncertainty due to a long gestation period is neither in the control of the Petitioner nor the power purchaser, NEPRA has developed its Mechanism for Determination of Tariff for Hydropower Projects. The Hydropower Tariff Mechanism provides for determination of tariff and subsequent adjustments at different stages of development of hydropower projects. In this respect three distinct stages have been identified in the Mechanism for Determination of Tariff for Hydropower Projects:

- Feasibility stage;
- EPC stage; and
- COD stage (after achievement of Commercial Operation Date (“COD”)).

On April 9, 2015 KHCL’s Feasibility Stage Tariff was determined by NEPRA pursuant to Power Acquisition Request from NTDC of April 23, 2014, since the Project is located in AJK. NEPRA, under rule 4(2) of Interim Power Procurement regulations 2005 followed for AJK based projects and under Power Policy 2002 (the “IPPR”), granted permission to initiate power acquisition negotiation and accordingly allowed advance tariff based on feasibility study report.

This proposal pertains to EPC stage and is filed in accordance with the NEPRA (Import of Electric Power) Regulations 2017. This tariff proposal is being submitted to CPPA-G, being the Power Purchaser, for approval.

3.2 Request for EPC Stage Tariff Approval

CPPA-G is requested to consider KHCL’s EPC stage tariff and submit its Power Acquisition Request to NEPRA in accordance with the NEPRA (Import of Electric Power) Regulations 2017 and Policy for Power Generation Projects 2002. The Company will be pleased to provide any further information, clarification or explanation that may be required by the CPPA-G during its evaluation process.

Section 04: Project Background

4.1 Background

In June 2007, WAPDA awarded the contract to a consortium of consultants led by M/s SMEC of Australia for carrying out Feasibility Study, DED & TD (the “SMEC’s Feasibility Study”) of the Kohala Hydro Power Project (the “Project”).

The Project was offered to Chinese investors/companies for further development and financing during President of Pakistan’s visit to China in October 2008.

In October 2008, a Memorandum of Understanding (the “MOU”) was signed between Ministry of Water & Power, Government of Pakistan (the “GOP”) and the China International Water & Electric Corporation (CWE), a 100% subsidiary of China Three Gorges Corporation (the “CTG”), for Implementation of the Project in the private sector.

On January 15th, 2009 the Letter of Intent (the “LOI”) was issued by Private Power & Infrastructure Board, of GOP (the “PPIB”) upon submission of Performance Guarantee (the “PG”) by CWE. Subsequently, in June 2011 the Economic Coordination Committee (the “ECC”) of the cabinet also endorsed the decision of Azad Jammu and Kashmir Council (the “AJK Council”) for the development of the Project in accordance with the terms of MOU.

After issuance of the LOI, CWE commenced updating of the SMEC’s Feasibility Study, which was monitored & approved by the PPIB’s Panel of Expert (the “PoE”) comprising of members from NTDC, WAPDA & GOAJK (the “**2010 Feasibility Study**”). On July 19th, 2011 PPIB conveyed the approval of the feasibility study to the Company and advised to approach the NTDC to finalize the feasibility stage tariff.

After review of the 2010 Feasibility Study and different technical factors of the Neelum Jhelum Hydropower, Project Sponsors were not certain on following key areas, which could have an impact on developing of the Project. The main issues were as follows:

- a) the impact of HFT active faults on the Project is not clear;
- b) natural building materials reserves required for the construction are insufficient;
- c) the overall depth of preliminary feasibility study is not enough; and
- d) necessary “Special Studies” to support the feasibility study were missing.

In view of above following additional special subject technical studies were carried out by BIDR China in 2012 (“Special Studies”).

- i. Surveying Report
- ii. Study of desilting basin
- iii. Study of impact of HFT Fault on Project and countermeasures
- iv. Study of Constructing Headrace Tunnel Using New TBM
- v. Study of Constructing Headrace Tunnel Using TBM from Neelum-Jhelum HPP
- vi. Overall Sedimentation Model Test Report

- vii. Overall Hydraulic Model Test Report
- viii. Geological and Geotechnical Report

On April 9, 2015 KHCL's Feasibility stage tariff was determined by NEPRA (Annex – 1) pursuant to Power Acquisition Request from NTDC on April 23, 2014. The tariff allowed was PKR 7.0917 / kWh (US Cents 7.2365 / kWh).

Consequent to the Tariff Determination by the NEPRA and after the submission of Performance Guarantee by the Company, the PPIB issued its Letter of Support (the "LOS") Ref No. 1(101) PPIB-Kohala/15/PRJ/O-45719 dated December 31, 2015 (Annex – 2)

In September 2014 a meeting was arranged by PPIB to deliberate implications of diverted flows of River Neelum into River Jhelum due to construction of Kishanganga Hydroelectric Plant (KHEP) by India in occupied Kashmir area on the Project and following decisions were taken during the meeting (Annex – 3):

- the Company shall carry out a study describing impacts on capacity, energy, design modifications, cost and tariff of the Project likely to result from utilization of anticipated additional water from Neelum (Kishanganga) River into Jhelum River during high flow period.
- The Sponsors shall refine the ongoing environment study especially w.r.t. minimum flows required during low flow period to meet the environmental, ecological and social requirements.
- Sponsors are required to proceed as per activities scheduled earlier for obtaining LOS after tariff determination besides carrying out above-mentioned study.

Based on the above decisions, the Company updated the 2010 Feasibility Study, Special Studies and conducted supplementary design work of the Project through BIDR China. This feasibility study was approved by PoE and communicated to the Company vide Letter No 1(101) PPIB-Kohala/16/PRJ/O-46915 dated June 9, 2016 (Annex-4). (the **"2016 Revised Technical Report"**).

The PoE approval of the 2016 Revised Technical Report was granted after taking into consideration the impact of topographical cum geological constraints, as well as additional work resulting mainly from increased dam height, construction of E-Flow power station (24 MW) to cater for increase in E-flow from 5 cumecs to 30 cumecs and to benefit from additional flows of Kishanganga hydroelectric project; allowed six and half (6.5) years construction time.

On 31st December 2015, subsequently, after the approval of the 2016 Revised Technical Report and after submission of enhanced Performance Guarantee, amended Letter of Support (LOS) Ref No. 1(101) PPIB-Kohala/17//PRJ/O-48580 was issued on March 27, 2017 (Annex-5).

4.2 About the Applicant and the Project Sponsors

4.2.1 The Applicant

KHCL was registered in September 2015 under the Companies Ordinance 1984 with objective to set up a hydropower generation project of 1,124 MW under BOOT basis. The Company is a 100% subsidiary of CSAIL. KHCL has a fully staffed team of professionals at its Head Office in Islamabad and has also already set up its Site office in Muzaffarabad, AJK.

4.2.2 The Project Sponsors

China Three Gorges Corporation (the "CTG")

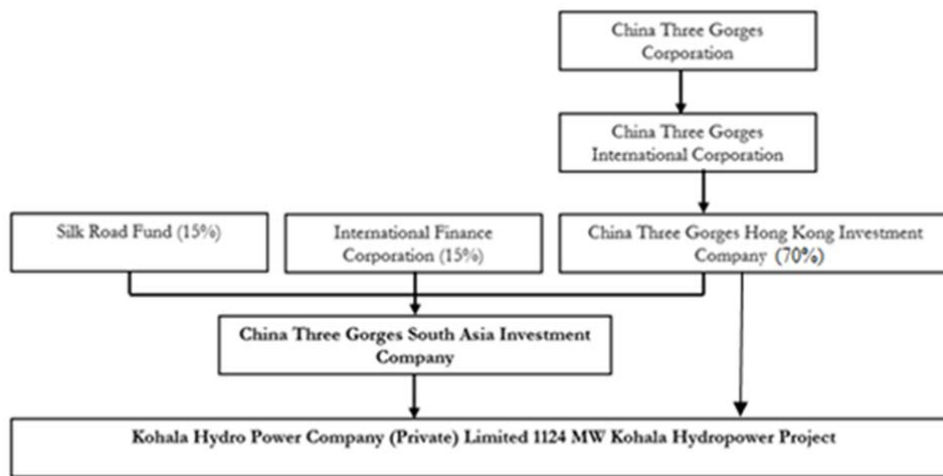
CTG is a wholly state-owned enterprise with a registered capital of RMB 149.54 Billion (USD 21.7 Billion). CTG is strategically positioned as a clean energy conglomerate specializing in development and operation of large-scaled hydropower projects.

CTG's principal operations include engineering, construction, management, electricity production and provision of related technical services for hydropower projects. With experience in the construction, management and operation of the Three Gorges Project – 22,500 MW (world's largest hydropower project), CTG has developed “four core abilities”

- Construct and manage large-scale hydropower projects,
- Raise and manage funds for large-scale hydropower projects,
- Operate and market large-scale hydropower projects and
- Manage unified dispatching of cascade hydropower projects.

4.3 Ownership Structure

China Three Gorges South Asia Investment Company Limited (the “CSAIL”) is the Main Sponsor in the Project Company. Ownership structure of CSAIL leading up to ultimate parent company i.e. CTG is explained through the hierarchical diagram below:



4.3.1 China Three Gorges South Asia Investment Limited (the “CSAIL”)

CSAIL is incorporated for the purpose of acquiring, investing, developing, building, owning and operating renewable power generation projects in Pakistan and other territories. CSAIL’s current multi-stage project pipeline is US\$5.5 billion (approx.), comprising of hydro, wind and solar power projects with a cumulative capacity of over 2,634 MW, including three hydropower projects with total installed capacity of 2,484 MW. CSAIL aims to become the largest renewable power company in Pakistan. This Project marks the entry of a large and experienced sponsor with a significant investment program in Pakistan's electricity market that needs an investment of around US\$15-20 billion to develop 10,000 MW of additional generation capacity in the next 5-6 years to overcome the supply shortfall in Pakistan. CTG owns 70% shares in CSAIL.

4.3.2 International Finance Corporation (IFC)

The International Financial Corporation, a member of World Bank Group with total assets of USD 90 Billion. IFC is committed to developing hydel and alternative energy projects in Pakistan and has committed more than USD 500 Million so far towards this sector. IFC owns 15% shares in CSAIL.

4.3.3 Silk Road Fund – owned by Government of China (the “SRF”)

The SRF has a total capital of USD 40 Billion, of which USD 10 Billion has been subscribed. The SRF is a medium to long-term development and investment fund. Through a variety of forms of investments and financings primarily equity investment, the fund is dedicated to supporting infrastructure, recourses and energy development, industrial capacity cooperation and financial cooperation in countries and regions involved in Silk Road Economic Belt and the 21st Century Maritime Silk Road Initiative. Like IFC, SRF also owns 15% shares in CSAIL.

Section 05: The Project

5.1 Project Location

The Project is located in the northeast of Pakistan, and will be the second of six hydropower projects planned to be built on the Jhelum River in the State of AJK. The adjacent upstream project is the Chakothi-Hattian Hydropower Station and the adjacent downstream project is the Mahl Hydropower Station. The powerhouse of the Project is 85 km from Islamabad and 35 km downstream of Muzaffarabad, while the dam site is 30 km upstream of Muzaffarabad. The catchment area of the dam site is 14,060 km², with an average annual discharge of 302 m³/s and average annual runoff is 9.52 billion m³. The Project will generate power with a reservoir operational water level of 907 m and reservoir capacity of 19.90 million m³.

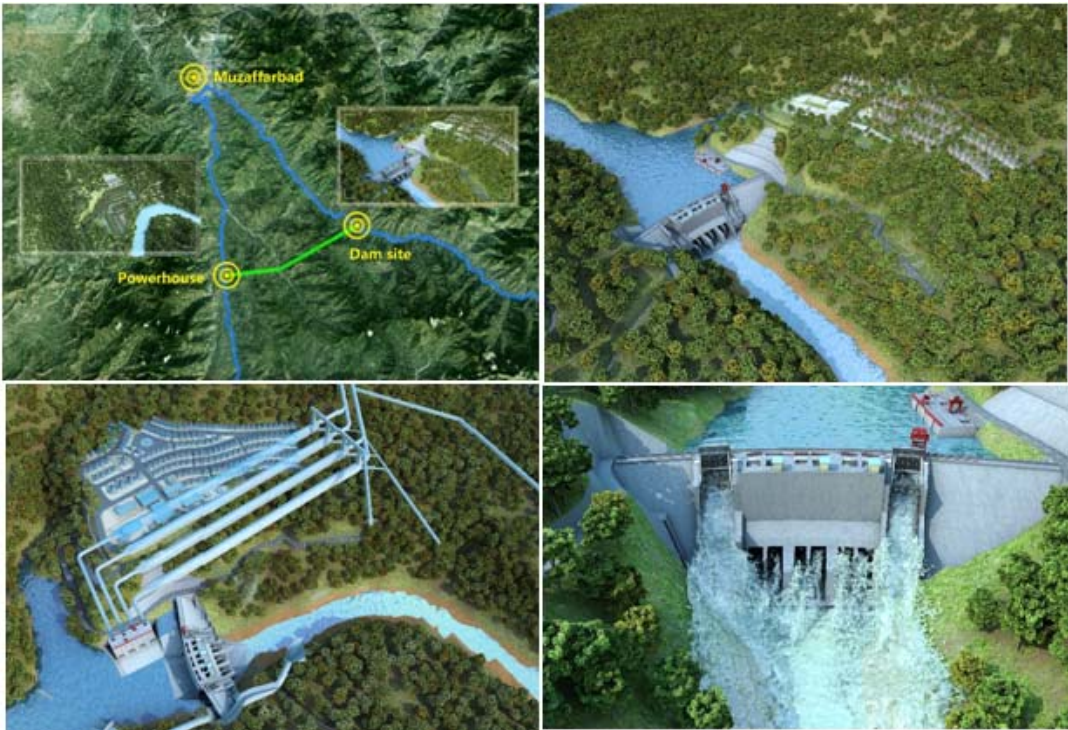


5.2 About the Project

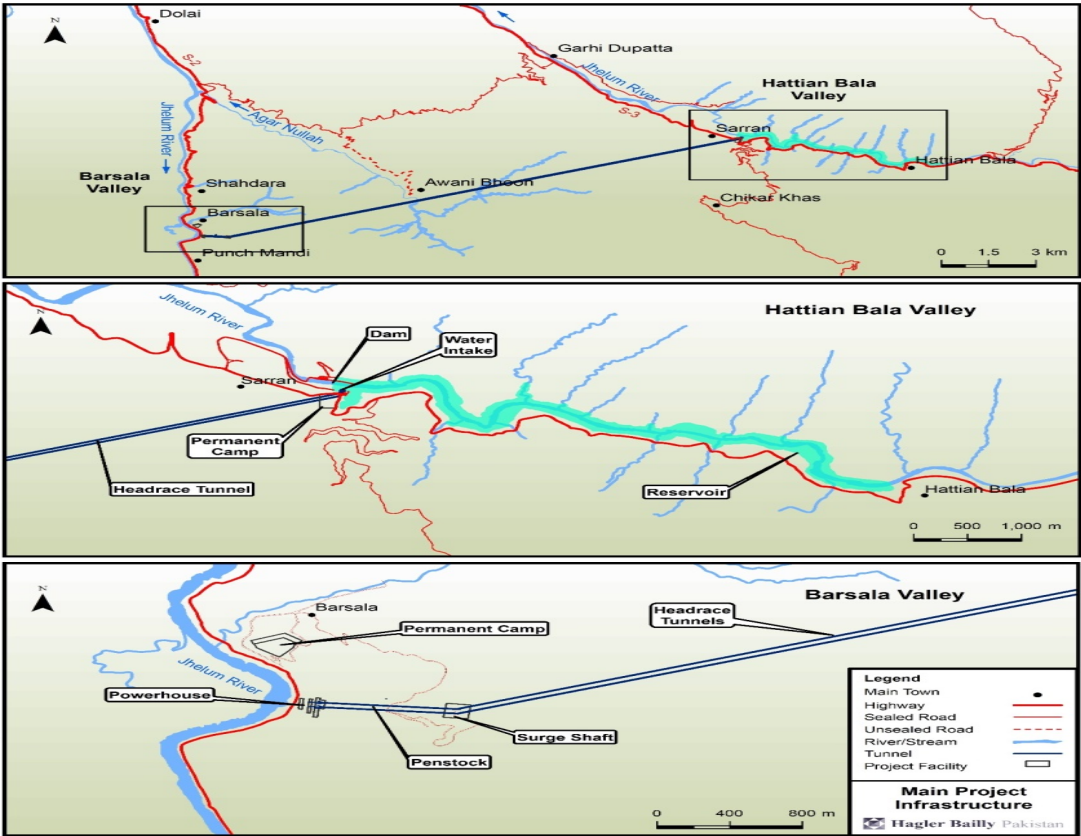
The Project comprises of a dam on the Jhelum River, including twin headrace tunnels about 17.4 km long which end in the main powerhouse and tailrace outlet downstream on the Jhelum River. River Jhelum forms a large syntaxial bend in AJK territory, which is known as Domel bend. Muzaffarabad is at the apex of the triangle formed by two limbs/arms of the river. This condition of the river provides opportunity for generating large amounts of power by joining its two arms by a trans-mountain tunnel.

- Structures of the Project comprise of headworks, waterway system for power generation and powerhouse. The powerhouse is semi underground.
- The headworks will include the dam, ecological flow hydropower station and permanent camp at the dam site.
- The waterway system for power generation includes the water intake, headrace tunnel, surge shaft, penstock and associated structures.
- The powerhouse system includes the semi-surface powerhouse, tailrace, switchyard, permanent camps at the powerhouse area and associated infrastructure.
- The dam will be a curved concrete gravity dam, with a crest elevation of 910 m, a maximum height of 69 m and a top length of 270 m.
- The water inlets will be bank-tower independent inlets, consisting of two independent intake tower sections arranged side by side. Their invert and top elevations will be 882.0 m and 911.2 m respectively resulting in an intake height of 32.7 m.
- The two headrace tunnels will be parallel to each other with a 45 m distance between centers; each tunnel will have an 8.5 m diameter, 17.4 km length and 425 m³/s total design diversion flow.
- The catchment area of the dam site is 14,060 km², with an average discharge of 302 m³/s. This shall generate power with a reservoir operational water level of 907 m and reservoir capacity of 19.90 million m³.
- The total installed capacity of the hydropower station will be 1,124 MW, comprising 1,100 MW installed capacity for the main power station and 24 MW (2 x 12 MW) installed capacity for the ecological flow power station. The main power station will be equipped with 4 vertical Francis turbine generator units, each with a capacity of 275 MW and ecological power station will be equipped with 2 vertical Francis turbine generator units, each with a capacity of 12 W. The average annual energy generation of the Complex will be 5,149 GWh.

Given below the pictorial view of the power house and dam site location of the Project:



Dam site and powerhouse location



Kohala Hydropower Project Facilities Layout

The interconnectivity scheme of the 1100 MW Power Station is looping in-out two 500KV circuits considering N-1 contingency condition:

- a) The 500 kV circuit from Neelum Jehlum HPP to Gujranwala. The looping distance is 300 meters, using 500 kV Drake conductor
- b) The 500 kV circuit from Suki Kinari HPP to Azad Pattan HPP. The looping distance is around 1 km (just to get to the other side of the river), using 500 kV Martin conductor

For Ecological Power Station, the scheme will be looping in/out the 132 kV circuit between Hattian and Muzaffarabad-II 132 kV grid station at Kohala Ecological HPP. The conductor used would be Lynx and the looping distance would be 150 meters

5.3 Justification for the Project

Pakistan is blessed with vast hydropower potential in the State of AJK and Gilgit Baltistan. Development of hydropower projects came to a halt since after the construction of the Mangla and Tarbella Dams, which upset the fuel mix of the country negatively, and other than Ghazi Barotha Hydropower Project in Khyber Pakhtoonkhwa and Punjab Provinces, which came into operation in 2004, thereafter, no major projects were undertaken.

With the successful financial close of Pakistan and AJK's first private sector hydropower project i.e. the 84 MW New Bong Hydropower Project in 2010 (the "New Bong Hydropower Project"), and as a result of the pro-active support of the GoP, development activities in the hydropower sector has seen a major jump, and a number of hydropower projects are under various stages of development. In this connection, CSAIL is developing three large hydropower projects having a total installed capacity of 2,484 MW to tap the hydropower potential of the Jhelum River. Implementation of these projects will bring energy security, save foreign exchange in billions of US dollars over the life of these projects, create thousands of jobs, stabilise socio economic life style of the people of Pakistan and the State of AJK and provide the much needed energy on a sustainable basis for rapid growth of the country.

5.3.1 Project's Benefits to Pakistan and AJK

Apart from being a large-scale power generation project based on indigenous resources, the Project has various additional advantages:

- Project would provide economical and reliable electricity to the national grid
- It is the largest private Hydel investment in Pakistan & AJK, and its successful development will enhance the confidence of other potential investors in Pakistan and State of AJK
- After completion of 30 year term the Project, costing around US\$ 2.760 Billion, the Project shall be transferred to AJK free of cost
- Project will produce employment opportunities for local population
- Economic opportunities in the local area and Pakistan like subcontracts, suppliers etc.
- After COD of the Project, AJK Government will receive around:
 - ✓ **Rs. 2.188 Billion** annually for 30 years on account of Water Usage Charges (the "WUC") (which translates to per day income of around Rs. 6 Million for AJK) – Rs. 65.65 Billion over 30 years.
 - ✓ **Over Rs. 10 Billion** on account of various taxes during 6.5 years of construction of the Project.
- Under the Corporate Social Responsibility ("CSR"), Project will prepare and implement a Community Investment Plan (the "CIP") for betterment of the communities in the Project area through interventions in areas of health, education, community physical infrastructure, etc.

5.4 Macro-economic challenges

Development of the Project demonstrates the resolve of the Sponsors to overcome many daunting risks, and these efforts continue to be made, some of which are as follows:

5.4.1 Political Risk:

Due to several reasons, such as territorial disputes with neighboring countries etc, Pakistan continues to be placed amongst countries having high political risk. The uneven



development of international and regional economies and the conflicts of interests and disputes arising therefrom further complicate and diversify the international political and economic situation.

5.4.2 Financing

The Project is estimated to cost at USD 2.760 billion requiring largest ever private sector financing in Pakistan, both for debt as well as equity. The Sponsors and KHCL had approached the major multilaterals for financing of the Project. However, due to the geopolitical situation and location of the Project in the State of AJK, they declined to finance the Project. The Sponsors and KHCL have subsequently engaged with leading Chinese and Pakistani banks for raising debt finance on most optimal terms and conditions.

Following are the few challenges faced in raising debt financing for the Project:

- Project location in State of AJK
- Tenure of 18.5 years (inclusive of 6.5 years of construction period)
- Complex Security structure for securing the loan from Chinese banks
- Concerns with delays on Neelum-Jhelum Project being in the vicinity of the Project

5.4.3 Circular Debt

For Hydropower Projects after the COD payment has to be made by the Power Purchaser as per the long term Power Purchase Agreement for debt servicing and to enable project operations and maintenance etc.

The main reasons of Pakistan's circular debts include Pakistan power system losses, delay by end-users in paying or refusing to pay electricity fees and usage by DISCOs of their cash reserves to pay for other expenses, as such the electricity fees payable by DISCOs to CPPA are not paid on time. GOP continues to make efforts to tackle these challenges.

5.5 Technical challenges

In general, hydropower projects are considered to be difficult and complex in many respects. The Project proposes to overcome these complexities through thorough investigations, sound design, solid planning and established track record and experience of CTG. Some of the key technical challenges are as follows:

• Tunneling

The geotechnical conditions are considered to be difficult with respect to the extensive tunneling and other underground work in the case of the Project. The two 17.4 km long headrace tunnels to be excavated by drill and blast operation are on the critical path of the construction activities. The tunnels have a round section, a diameter of 8.5m. The headrace tunnels have Class III surrounding rocks primarily, Class IV surrounding rocks secondarily and Class II and V surrounding rocks in a few areas. According to prior geological survey and the excavation work of the 969 MW Neelum-Jhelum Hydropower Project, the Project's primary geological problems include water burst, soft rock deformation and rock burst.

• Natural Disaster

Kohala Hydropower Station is a diversion-type hydropower station. The diversion hub is located near Dhanni Village along the Jhelum River. The powerhouse site is 3km upstream to the iron bridge at Kohala Village. Two headrace tunnels in a length of about 17.4km each are adopted.

According to the risk evaluation of the risk database of Munich Re, the natural disaster risks facing the Project have the following characteristics:

- a. High level of risks: the natural disaster risks on the powerhouse site and dam site are high generally, with a rating of Extreme by Munich Re.
- b. Multiple types of risks: the natural disasters on the powerhouse site and dam site primarily include earthquakes, lightning, hails and flashfloods.
- c. Difference in risk on the powerhouse site and dam site: the risks are higher on the dam site than the powerhouse site as they reach the highest risk zone of Munich Re, i.e. Zone 4; the risks on the powerhouse site reach the Zone 3. The primary reason is that the two sites are located in two directions of a fault. The dam site, as located above the fault, has a higher risk of earthquake.

Section 06: EPC – Process & Selection

6.1 Summary of the International Competitive Bidding Process

The Company carried out International Competitive Bidding process in order to ensure that the most transparent, competitive, fixed prices, and time-certain, turnkey EPC offers, are received by the Company for the Project. The transparency and fair competition was ensured by conducting the entire bidding process by means of following steps:

- a) Invitation to EPC Contractors for submitting EPC Tenders for the Engineering, Procurement and Construction works for the Project, was advertised in national (Dawn, Business Recorder and The News) as well as international newspapers (Financial Times) on September 12th and September 16th, 2016 respectively. (Annex – 6)
- b) All interested bidders obtained the bidding package on payment of prescribed fee of USD 5,000 within the time span starting from September 12, 2016 until September 23, 2016, during office hours of the Company.
- c) A comprehensive bidding package (Annex -7) was provided to the bidders for preparation of their bids, which included all necessary commercial and technical information, drawings, reports and EPC contract including but not limited to the following information:
 1. Project Requirements and commercial details.
 2. Technical Studies
 - i. Feasibility Study Reports
 - ii. Survey Report
 - iii. Geological Reconnaissance Report
- d) Ample time for submission of bids was provided to all the interested bidders i.e. up to 18th November 2016.
- e) Equivalency and comparative standards were maintained by asking for standard formats/statements wherever practicable.
- f) All bids received were opened in the presence of Evaluation Committee nominated by the Company on November 18, 2016.
- g) Evaluation Committee carried the evaluation of Tenders on November 25, 2016. In parallel the Owner's Engineer a Joint venture of Lahmeyer International GmbH, Germany & Changjiang Survey, Planning, Design and Research Company Co., Ltd (CSPDR), was requested by KHCL to conduct a separate Tender Evaluation which was provided on December 27, 2016. Thereafter Mott McDonald's of UK was appointed to conduct an independent evaluation, assessing how well each of the proposals met the specifications outlined in the tender documentation provided by the Company. Attention was additionally paid to demonstration of sound engineering design and appropriate optimization.

6.2 EPC Tendering Timelines

The timelines followed by the Project Company in order to finalize the EPC contractor are provided below:

EPC Tendering Steps	Date
Commencement of work on tender documents	April, 2016
Publication for invitation to bid in newspaper	September 12, 2016 (Local) September 16, 2016 (Foreign)
Deadline for acquiring of bidding documents	September 23, 2016

Site visit with potential tenders	October 09-10, 2016
Clarifications and issuance of addendum to potential tenders	September-November, 2016
Submission of tenders along with tenders security of USD 10 million	November 18, 2016

6.3 Scope of Work under EPC

The Company invited comprehensive proposals to construct the Project, on turnkey, time certain, fixed cost basis, fit for the purpose including without limitation engineering, design, procurement, construction installation and commissioning of all energy producing equipment (and its auxiliary equipment), civil structures, headrace, tailrace, temporary water-ponding facilities and a switchyard (the “EPC Works”).

EPC Works include Reservoir, Diversion and Intake Structure, two headrace tunnels, surge shaft chamber, pressure shafts, 1,100 MW main hydro-electric power generation station, 24 MW ecological flow power generation station, tailrace tunnel, switchyard, two employer’s permanent Camps, all energy producing equipment and its auxiliary equipment, the Employer’s Interconnection Facilities (but excluding the Power Purchaser Interconnection Facilities), and all other equipment or facilities necessary for delivery of electricity to the Power Purchaser at the Interconnection Point with NTDC 500 kV system.

Brief description of scope of works to be undertaken for different components is given below:

Reservoir

- Reservoir will be created upstream of the Diversion Structure to maintain storage of water up to El 905 m required for peaking. The reservoir will have adequate freeboard to avoid overtopping of the Diversion Structure in the event of the $p=0.01\%+10\%$ Flood;
- Cutting and protection of rock slopes both along the reservoir and for Diversion Structure;
- Reservoir cleaning;
- Establishment of two gauging stations at upstream and downstream of dam in catchment area;
- Installation of hydrological telemetry system at appropriate location in the catchment area of the reservoir

Diversion and Intake Structure

- A 69m high concrete gravity dam with two spillways and four bottom outlets;
- An ecological flow power station;
- Intake structure for the Headrace Tunnel with Trash racks and cleaning machine;
- Gates and hoisting arrangements for the spillways, bottom outlets, intake structure, ecological flow power station;
- Service gates for the spillway, bottom outlet and intake;
- Upstream and downstream cofferdams during construction;
- Division tunnel for river diversion during construction (if any);
- Roads leading to permanent service adits, colony, dam crest, ecological flow power station.

Headrace Tunnel

- Two 8.5m internal diameter concrete lined headrace tunnels
- Two surge shafts;
- Gates and hoisting arrangements for two surge shafts;
- Two 6.8m diameter double stage pressure shafts;
- Two 6.8m diameter penstocks at the end of pressure shafts. Each penstock further bifurcates into 2 penstocks of diameter 3.6 meters (total 4 penstocks);
- Four permanent service adits leading to headrace tunnel;
- Roads leading to permanent service adits;
- Adits along with approach roads, bridges and all enroute structures.

Main Hydro-electric Power Generation Complex - 1100 MW

- A semi-underground power house situated about 3 km upstream of Kohala bridge;
- Four tailrace tunnels releasing the water into the river Jhelum with outfall structures;
- Four generating units comprising vertical shaft Francis Turbines, approx. 280.041 MW each; four 275 MW generators with rated voltage 15.75~18 kV; four spherical valves of DN3400mm, 114.58

- MVA single phase step-up transformers, isolated phase bus, generator circuit breakers, station auxiliary transformers, protection and relay equipment, cables, control & instrumentation system, lighting, earthing and fire alarm systems etc.;
- d) Other mechanical and electrical equipment include two bridge cranes, one gantry crane , one mobile crane, draft tube gates , monorail hoists, lifts, heating and ventilation system, auxiliary systems including cooling water, dewatering and drainage, compressed air, turbine and insulating oil, measurement and Maintenance equipment ;
 - e) Indoor 525kV Gas Insulated switchgears comprising 525 kV outgoing lines equipment, gantry crane, earthing, lighting, AC & DC system, spare parts, erection & testing tools. 500kV cable for interconnection between generator transformer and GIS. Control, protection and metering system, telecommunication system and dispatching automatic system;
 - f) Medium voltage and Low Voltage AC and 220 Volts DC power supply facilities and infrastructure within power house, switchyard and surge shaft;
 - g) SCADA, and communications facilities which will also include data transmission and telecommunication facilities to connect all structures, Control Stations, Employer, Power Purchaser and other concerned centres;
 - h) Fire Fighting System in the powerhouse;
 - i) All repairs, Overhaul and maintenance facilities and special tools to meet the complete requirements of the powerhouse and ancillary structures;
 - j) Mechanical & Electrical workshops and testing laboratory within power house;
 - k) Emergency diesel generating units at powerhouse for black start;
 - l) One gauging station near tailrace outlet;
 - m) Permanent Roads to powerhouse, colony, switchyard, surge shaft, service adits.

Ecological Flow Power Generation Station-24 MW

- a) Two generating units comprising vertical shaft Francis Turbines, about 12.31 MW each; two 12 MW generators with rated voltage 11 kV, 15 MVA three phase step-up transformers, generator circuit breakers, station auxiliary transformers, auxiliary systems including cooling water, dewatering and drainage, compressed air, turbine and insulating oil, measurement and Maintenance equipment, crane, SCADA, protection and relay equipment, cables, control & instrumentation system, fire alarm systems and fire fighting systems and communication system
- b) Medium Voltage and Low Voltage AC and 220 Volts DC power supply facilities and infrastructure for ecological power house, dam, diversion and intake;
- c) Emergency diesel generating units at ecological powerhouse and dam;

Permanent and Construction Camps

- a) A main camp located near semi-underground powerhouse;
- b) A second camp located near the site of Diversion Intake Structure;
- c) Both colonies will have internal and access roads, water treatment and supply system, sewerage system, boundary fences and electrification system.

Miscellaneous Works

- a) Control room, relay rooms, workshop and storage facilities, offices and other facilities including temporary and permanent access roads, culverts and bridges required for the Project.
- b) The work also includes lighting at key areas of Project in the vicinity of diversion structure and the crest, power intake, tunnel outlets, camp roads and its approaches;
- c) The Contractor will be responsible for making adequate fire fighting and security arrangements at all components areas of the Project;

6.4 Marking of Overall Bid

• Step 1 – Responsiveness

First and foremost the proposals submitted by the tenderers were evaluated to determine the responsiveness of each tender with regards to the requirements laid out under the bidding documents. For this purpose a basic responsiveness matrix was developed, the same is provided below for reference:

Sr.	Evaluation Criteria	Category	Description	Decision
1	Completeness	Statement of Qualification (SOQ)	Does the bid satisfy the requirements laid out in the SOQ	Responsive / Non Responsive
2	Experience	General Experience	Information regarding hydropower experience attached / not attached	Responsive / Non Responsive
		Particular Experience	Specific experience related info attached / not attached	Responsive / Non Responsive
3	Competence	Design capacity	Documents reflecting competence of contractor provided / not provided	Responsive / Non Responsive
		Manufacturers of Equipment	Documents reflecting competence of equipment manufacturer's attached / not attached	Responsive / Non Responsive
4	Financial	Financial soundness	Documents in support of financial soundness of contractor attached / not attached	Responsive / Non Responsive

A brief on the requirements set out under the SOQ and basic evaluation criteria for determining responsiveness of bid is provided below:

- a) **Organization structure:** To be a firm, partnership or company duly organized, existing and registered under the laws of Pakistan or countries of their origin, except the countries not having business relations with Pakistan.
- b) **Construction Experience:** To have the minimum experience and ability in the works covered by the scope of the Tender as stipulated below.
 - 1) The Contractor or the Lead Partner of the Joint Venture/Consortium shall have successful completion or the on-going of one (1) EPC /Turnkey hydropower Contract with a minimum value of US \$ 200 Million during the last ten (10) years in South or Southeast Asia, and
 - 2) The Contractor or Lead Partner of the Joint Venture/Consortium shall be with at least one hydropower plant of 700MW constructed or the on-going in the last ten (10) years, and
 - 3) A Concrete Gravity Dam with a height of at least 60 m in the last ten (10) years, and
 - 4) One hydraulic tunnel at least 5m diameter with the length of 2.5 Km including at least 100m of shaft or incline tunnel in the last ten (10) years, and
 - 5) One powerhouse complex with the net width of at least 20 m in the last ten (10) years, and
 - 6) One Powerhouse with Francis turbines with unit capacity greater than 180 MW in the last ten (10) years.
- c) **Design Experience:** The Design Engineer may be a firm acting as a Sub-Contractor to one of the partner of the Joint Venture/Consortium or to the Joint Venture/Consortium itself but this Design firm shall satisfy the requirements expressed here below. The specific requirements are as follows:
 - 1) Designed at least one hydropower plant completed or on-going at least 400 MW in the last ten (10) years, and
 - 2) Designed at least a Concrete Gravity Dam with a height of at least 60 m in the last ten (10) years, and
 - 3) Designed one hydraulic tunnel in the last ten (10) years, (at least 5m diameter with the length of 15Km), and
 - 4) Designed at least a powerhouse complex of Francis turbines with single unit capacity greater than 150 MW in the last ten (10) years, and
 - 5) Designed at least a powerhouse complex of the net width of at least 20m in the last ten (10) years.
- d) **Equipment Manufacturer**
 - 1) The turbine - Generator manufacturer should have at least ten (10) year's experience in manufacture of vertical Francis turbines of not less than 200 MW units each at head of over 200 m.
 - 2) The Transformer Suppliers should have at least ten (10) year's experience in manufacture of one single phase Transformers at least 100 MVA with the rated voltage of 500kV.
 - 3) The Gas Insulated Switchgear (GIS) Suppliers should have at least ten (10) year's experience in manufacture of 500kV GIS.
- e) **Personnel:** To have qualified responsible key personnel who are competent and experienced with similar works and are available for assignment

f) **Financial:** To have a sound financial standing and good banking references, duly proven

• Step 2 – Evaluation

Once a bidder was declared responsive in step 1, then evaluation started in step 2. The weightage for the overall marking of the bid in step 2 was as follows:

Item	Weightage (%)
Technical	50%
▪ Basic design, general plan & implementation methodology and Equipment procurement	
Financial	30%
▪ The Evaluated Lowest Tender Price shall be awarded 100 points	
▪ Financial scoring = $100 \times (\text{Evaluated Lowest Tender Price} / \text{Evaluated Tender Price})$	
Time for completion	15%
▪ Reliability of arrangement and intensity of Time for Completion	
▪ Additional methods to guarantee the Time for Completion	
Rationality of balance	5%
▪ Payment profile shapes of each of the bidders	
Total	100%

Technical evaluation was based on the following point scoring criteria:

Sr.	Description	Points
1.	Basic Design	
	Preliminary Draft Basic Design Report	
	Solution to key technology	
	Suitability of investigation, design and test plan	
	Key staff to be assigned to the project	
	Demonstration of their necessary design capability to execute the contract	
2.	General plan and implementation methodology statement for works	
	Suitability of the project arrangement	
	River closure plan	
	Resources, methods, workmanship of dam, diversion system and power station	
	Analysis and solution to construction key points and difficulties	
	Suitability and guarantee measure of construction plan	
	Protection measurement of relics and surrounding of the construction site	
	Site flood control during construction stage	
	Environmental during construction stage	
	Quality criteria to be applied	
	Health and Safety plans	
	Security plan	
	Demonstration of management ability to execute the Contract including qualification, experience and financial	
	Informatisation of the project	
	Condition of the sub-contract items and the qualifications of the sub-contractors	
	Key staff to be assigned to the project	
3.	Equipment procurement scheme	
	Guaranteed characteristics of the M&E equipment	
	Guaranteed characteristics of the metal structure	
	Equipment procurement, delivery, and transportation plan	
	Training and O&M service plan	
	Document submission plan	
	Brand and origin of equipment	
	Major electrical/mechanical and metal structure equipment items and systems technical plan	
	Total	100

Under financial evaluation marks were awarded as per the following criteria:

- The Evaluated Lowest Tender Price was awarded 100 points;
- Financial score of a Tender = $100 \times (\text{Evaluated Lowest Tender Price} / \text{Evaluated Tender Price})$;
- To evaluate the price of bids from the financial bid forms and schedules, the price is adjusted as follows:

- Making any correction for errors;
- Making any appropriate adjustment to equalize any factor or element which would affect the total cost or value to the Employer;
- Making any appropriate adjustment for any acceptable quantifiable variations or deviation in offers;

6.5 Response from Bidders

The invitation for Bidding was published in newspapers and on website of the Project Company on September 12, 2016 and September 16, 2016. Any company interested in EPC of the Project could obtain a copy of the bidding document, upon deposit of US\$ 5,000 or an equivalent amount in Pak Rupees. Following five parties purchased the Bidding documents:

1. Power Construction Corporation of China (POWERCHINA)
 - Power China provided comprehensive and full-range of services from planning, investigation, designing, consulting, civil works construction to M&E installation and manufacturing services in the fields of hydropower, thermal power, new energy and infrastructure. POWERCHINA has an asset base of US\$ 580 Million.
2. China Gezhouba Company Limited (CGGC)
 - CGGC has been granted 30 qualifications Grade I for contracting construction of various kinds of projects including Special-grade qualification for contracting construction of water resources and hydropower project on turnkey basis.
3. The consortium of Yangtze Three Gorges Technology & Economy Development Co. Ltd, & China Three Gorges Project Development Co. Ltd
 - Yangtze Three Gorges Technology & Economy Development Co. Ltd holds extensive experience in setting up Hydropower projects worldwide. The company provides engineering technology consulting, project management, and engineering contracting services.
4. China Machinery Engineering Corporation, China
 - CMEC is a large international integrated company with engineering contracting as core business. CMEC is currently engaged in the business of acting as main contractor of the international engineering contracting and the export of complete plant in over 150 countries and regions worldwide. CMEC has an asset based of US\$ 6,890 Million.
5. General Electric Intl Operations Company Inc.
 - General Electric Intl Operations Company Inc. is subsidiary of General Electric (GE). GE has a total assets base of US\$ 365 Billion.

Out of above 5 parties, the following parties submitted bids:

1. Power Construction Corporation of China (PowerChina)
2. China Gezhouba Company Limited
3. The consortium of Yangtze Three Gorges Technology & Economy Development Co. Ltd, & China Three Gorges Project Development Co. Ltd

6.6 Tender Evaluation

Phase 1: Completeness and fulfillment of Qualification Criteria

In accordance with the evaluation criteria and procedures stipulated in the bidding document, the Envelope 1 of each tenderer was opened in bid opening meeting on the day immediately following due date of submission, and its contents were examined for evaluation of responsiveness of tenders (Stage 1 evaluation) based on following:

- a) Completeness of tenders: An assessment of the completeness of tenders in responding to the Instructions to Bidders.
- b) Qualification of the tenderers: Eligibility of tenderers was established in terms of their capacity to design, build and commission the facility and to finance the works

Phase 2: Technical and Financial Evaluation

The second phase involved the evaluation of the Technical Proposal and Financial Proposals, which were found complete and eligible for evaluation.

6.7 EPC Bid Evaluation

Stage 1 – Evaluation by Committee appointed by Company

Company appointed an Evaluation Committee comprising of technical and financial members from the Company. Report of Tender Evaluation Committee is attached in (Annex 8)

Stage 2 – By Owner's Engineer

Thereafter Owner's Engineer Joint Venture of Lahmeyer International GmbH & Changjiang Survey, Planning, Design and Research Co. Ltd also conducted independent Tender Evaluation of EPC contractor. Report is attached as (Annex 9)

Stage 3 – Independent Evaluation by Third Party – Mott MacDonald's

Later on Company appointed Mott MacDonald to perform independent evaluation/review of EPC Proposals. Mott MacDonald conducted an independent review through assessing how well each of the proposals met the specifications outlined in the tender documentation provided by the client. The report is attached at (Annex 10).

Scope of work included providing a fair and objective assessment of the three tender proposals based on the information provided in the tender documents.

Overall Bid Evaluation was based on the following:

- a) Determination of responsiveness
- b) Technical evaluation
- c) Financial evaluation
- d) Time for completion
- e) Rationality and Balance

The accumulated results after careful extensive evaluation of the bids received, Mott MacDonald's reflected TGDC to be the qualifying bidder amongst the three (3). The point scored by each of the bidders is given in the table below:

	Max Points	CGGC	Power China	TGDC & TGPD
Technical Evaluation	100	66	59.5	85.5
Financial Evaluation	100	91.6	87.6	100
Reliability and Time for Completion	100	89	60	90
Rationality and Balance	100	40	80	60
Final Weighted Score	100	75.8	69	89.3
Ranking		2	3	1
EPC Price US\$ M		1,961.5	2,050.3	1,793.5

Given below are the timelines after selection of preferred bidder:

EPC Tendering Steps	Date
Evaluation of tenderers by the Company	November 25, 2016
Independent Evaluation of the Bids by Lahmeyer	December 27, 2016
Signing EPC contract	January 21, 2017

6.8 EPC Contractual Arrangement

Based on tender evaluation and subsequent negotiations, Company has entered into the EPC Contract(s) with the consortium of Yangtze Three Gorges Technology & Economy Development Co. Ltd & China Three Gorges Project Development Co. Ltd (Jointly named as "TGDC"), which comprised of two (2) separate contracts, namely:

- a) The Engineering and Construction Contract (the "Onshore Contract"); and
- b) The Equipment Supply Contract (the "Offshore Contract")

EPC contract provides a lump-sum price, as provided in the below table:

Description	Local Currency (PKR Million)	Foreign Currency (US \$ Million)	Total (US \$ Million)
Onshore Contract	80,608	560	1,330
Offshore Contract		464	464
Total Contract Price (Excl. Sales Tax)	80,608	1,023	1,793

6.9 EPC Contractor

Brief profile of the EPC contractors is provided hereunder:

Yangtze Three Gorges Technology & Economy Development Co. Ltd (TGDC)

Yangtze Three Gorges Technology & Economy Development Co. Ltd holds extensive experience in setting up Hydropower projects worldwide. The company provides engineering technology consulting, project management, and engineering contracting services. It also holds good and high reputation in project management and supervision in water conservancy and hydropower engineering, M&E equipment installation and rich off site supervision experiences in large-size turbine generation Fabrication and installation, RCC dam construction, concrete gravity clam and mass underground cavern. A list of some of key hydropower projects undertaken by TGDC is provided below:

Sr.	Hydropower Projects	Country	Capacity(MW)
1	Murum hydropower project	Malaysia	944
2	Uppermadi hydropower project	Nepal	25
3	Da Dai River hydropower project	China	246
4	Three Gorges hydropower project	China	22,400
5	Jinsha River Xiangjiaba hydropower project	China	6,400
6	Jinsha River Xiluodu hydropower project	China	12,600
7	Jinsha River Baihetan hydropower project	China	16,000
8	Jinsha River Wudongde hydropower project	China	10,200
9	Jinsha River Jinanqiao hydropower project	China	2400
10	Yunan Lancang River hydropower project	China	420
11	Pakistan Karot hydropower project	Pakistan	720

China Three Gorges Projects Development Co. Ltd

China Three Gorges Projects Development Co. Ltd (TGPD) is a subsidiary of China Three Gorges Corporate, the largest hydropower development enterprise in the world and the largest clean energy group in China. TGPD is a company engaged in project investment, construction, management and consultancy, providing services to global customers spanning the whole industry chain of large and medium-sized hydropower projects and public infrastructure, etc. The registered capital of this wholly state-owned company is 2 billion RMB. Over the years of business development, TGPD has formed its capabilities for project investment and development integration, the construction and management of large-scale hydropower projects, innovation in hydropower standards. TGPD has won 12 awards for state-level technological achievements; it has established over 200 engineering quality and professional technical standards, and owners of 160 patents. A list of some of key hydropower projects undertaken by TGPD is provided below:

Sr.	Hydropower Projects	Country	Capacity(MW)
1	Three Gorges hydropower project	China	22,400
2	Jinsha River Xiangjiaba hydropower project	China	6,400
3	Jinsha River Xiluodu hydropower project	China	12,600
4	Jinsha River Baihetan hydropower project	China	16,000
5	Jinsha River Wudongde hydropower project	China	10,200

Section 07: Project Cost

A brief summary of the Project cost is detailed as under:

Sr.	Description	US\$ M
1	EPC Cost	1,793.50
2	Sales Tax (EPC onshore)	-
3	Reimbursement of WAPDA Cost	8.06
4	Engineering & Supervisions	56.89
5	Environmental and Ecology	5.76
6	Land Acquisition & Resettlement	51.92
7	Project Development Cost	77.88
8	Insurance during Construction	53.80
9	Legal Fees & charges	12.57
10	Duties and Taxes	28.51
11	O&M Mobilization	14.15
12	Financial Fees and Charges	44.16
13	Sinosure Fee	191.91
14	Interest During Construction	421.05
Grand Total		2,760.17

The Project Cost is based on the firm EPC Contract (Annex 11) – comprising of the Offshore Contract and the Onshore Contract. The reference exchange rate used to convert the PKR denominated costs into United States Dollars is US \$ 1 = PKR 104.85

7.1 EPC Cost

EPC cost of the project is US\$ 1,793.50 Million divided into following:

a) Civil Works (Onshore Contract): Civil works for the project includes construction of access roads and bridges, installation of camps and construction facilities, construction of dams and powerhouse, excavations of spillways and tunnels, construction works relating to reservoir area, Diversion and Intake structure etc.

b) Electrical and Mechanical Equipment (Offshore Contract): The hydro-mechanical equipment to be procured pursuant to the offshore contract by the project includes, turbines, generators, cranes, auxiliary equipment and spare parts, diversion tunnel stop logs, spillways gates, spillways stop logs, power intake gates, power intake stop logs, intake trash racks, outlet gates flushing, outlet stop logs etc.

Further breakdown of EPC cost in terms of currency of payment is provided below:

Description	Payable in Local Currency (PKR)	Payable in Foreign Currency (US \$)	Total (US \$)
Civil Works other than Tunnels	36,390.70	293.21	640.94
Tunnels	28,798.76	225.16	500.35
E & M Works	5,163.19	463.54	512.88
Testing and Commissioning	418.60	6.00	10.00
Detailed Engineering	835.11	31.92	39.90
Other EPC Costs (Including Coordination, Inland Transportation & Services, etc.)	629.75	3.41	9.43
Provisional Sum	8,372.00		80.00
Total (Excluding Custom Duties & Other Taxes	80,608.12	1,023.23	1,793.50

**Local currency translated into equivalent dollars using rate of US\$ – PKR 104.65*

As elaborated in Section 5.1.6 “EPC Contractual arrangement, the scope of work to be carried out by the EPC contractors through offshore & onshore works. Where, offshore works primarily relate to procurement and supply of electrical and mechanical equipment outside Pakistan, onshore works comprise civil works, erection, commissioning, testing, etc.

EPC cost for the Project is US\$ 1,793.50 Million, which excludes sales tax of US\$ 212.79 Million applicable at the rate of 16% on EPC onshore price. The feasibility stage EPC price was approved at US\$ 1,727 Million on 9th April 2015, which shows that the EPC price has not increased significantly in spite of the following factors:

- a) 24MW Ecological power station was not envisaged in the feasibility stage tariff petition.
- b) Increase in construction period from 6 years to 6.5 years.

Company adopted an effective and efficient International Competitive Bidding (ICB) process for procuring the services of EPC Contractor at the most competitive price. Bidding process allowed each tenderer to bid on design submitted in the tender documents. The tenderers submitted different technical schemes, and the most robust and cost effective solution was selected through the bidding process. Company believes that the prices as contracted with the EPC Contractors are reasonable under the prevailing market conditions.

The EPC Cost includes an amount of USD 80 million as Provisional Sum, which will be utilized for works and services that have and cannot be anticipated at this stage, given that:

- a) Project is located on fault line with two power houses,
- b) Dam and line of control
- c) Two tunnels each of 17.4 km
- d) Major cost overruns on projects like Neelum Jhelum with approx. cost more than USD 5 billion
- e) Security and political Risks
- f) Conditions of the Environmental Approval by the EPA AJ&K to be implemented by the Company

This concept is part of the FIDIC Red book, which recognizes that there may be some scope of work that is indeterminate at the time of execution of the contract and is therefore an accepted principle in the construction industry. The EPC price may be adjusted at COD and any such costs may be permitted subject to satisfactory documentary evidence being presented.

7.1.1 Adjustment for Cost Reopeners

In order to allow indexations to the onshore, as agreed under the Onshore Contract (in line with the Hydropower Tariff Mechanism), the Onshore Contract has been split into cost of tunnels and costs other than tunnels. Indexations applicable on the same are provided in section 11.

7.2 Sales Tax on EPC Onshore

After the promulgation of 18th Constitutional Amendment which provided fiscal autonomy to Provinces, Engineering and Construction (E&C) contracts are now subject to sales tax on services as per the Provincial and AJK sales tax laws. As a general rule, sales tax paid under E&C contracts can be claimed as input tax against the output sales tax charged to the Power Purchaser on the energy component of the electricity supplied to power purchaser.

In case of KHCL, the Company is obligated to pay services sales tax on E&C contract amounting to USD 212.79 Million on the E&C contract value of USD 1,330 million. Such sales tax shall be paid by the Company at the rate of 16% on the onshore invoices payable to the Contractor during the construction period of 6.5 years. It is pertinent to note that as per Notification No. FD/Tax 1145-1245/95 dated February 8, 1995; the Government of AJK has exempted manufacturing concerns from sales tax on their output, for a period of five years from commencement of commercial production. Even otherwise, the EPP component in the tariff does not exceed 4% thereof, resulting in insufficient output tax over the entire life of the Project so as to fully absorb the input sales tax paid. As sales tax comes within jurisdiction of the AJK Government and not AJK Council and also in view of the fact that services sales tax has been imposed recently, there is no establishment mechanism for refund for excess input sales tax. Even otherwise, under the sales tax rules of FBR as adopted in AJK, input sales tax is not refundable insofar it pertains to an exempt supply. Consequently sales tax paid on onshore EPC works and goods acquired in AJK will not be adjustable / refundable as input adjustment and consequently becomes a cost.

Due to the significant impact of sales tax amount of US\$ 212.79 Million on the Project cost and the tariff, the Company approached NEPRA to seek its guidance on this matter. NEPRA understood the issue but suggested that this matter be taken up with the relevant Government authorities for a solution i.e. grant of exemption on levy of sales tax during the construction period.

Accordingly, a meeting was held on January 24, 2017 in the Ministry of Water & Power where the representative of FBR was present, the Company advised that as per article 4 of CPEC Agreement “Pakistan party agrees to offer the most preferable conditions in terms of taxation” and that in Sindh vide Sindh Revenue board notification No. SRB3-4/3/2016 dated February 26, 2016 (Annex-12) the GoS has exempted whole of the tax on the services in respect construction services (including turnkey projects) in case of Thar coal based power projects. However, FBR was of the view that after 18th Amendment, the power of Sales Tax on services was with the provinces and FBR only dealt with Sales Tax issue on services within the jurisdiction of Islamabad Capital Territory, and therefore the matter should be taken up with the Government of AJK.

Thereafter numerous meetings have been held with AJK authorities, copies of correspondence are provided in Annex 13. However, the matter is still under discussion and Government of AJK has not made any final determination.

While the Company continues to pursue its request with Federal and AJK Governments for grant of exemption from sales tax, the amount of sales tax of US\$ 212.79 Million has not been included in the Project Cost with the understanding and request that in case the exemption is not allowed, such amount of sales tax paid on EPC onshore contract will be allowed by the Authority as part of the Project Cost, based on actual as and when notified by the relevant authority.

7.3 Reimbursement of Feasibility Cost to WAPDA

As per the term of the LOI, Sponsors were required to reimburse WAPDA for the cost the feasibility study. This cost was not approved by NEPRA at the Feasibility Stage tariff since NTDC had not provided any proof for reimbursement of cost to WAPDA. Since then, the cost of PKR 846 Million (US\$

8.06 million) has been paid by the Company to NTDC. The supporting documentation are provided at (Annex 14)

7.4 Engineering and Supervision

The Engineering and Supervision costs expected to be incurred by the Company comprise costs of the Feasibility Study, Owners Engineer, Independent Engineer, Reopener Verifier under Power Purchase Agreement (PPA) and technical consultancy for Government of China approval, Project Company's other engineering consultants, and Company's own supervision cost during the construction of the Project. Proper Engineering and effective Supervision is the essence for effective and timely execution of the Project. This includes supervision of procurement, installation and commissioning of the hydro mechanical and electrical works, as well as civil works during the construction period of the project. Total cost under this head is USD 56.89 Million as provided below:

Description	Annex Ref	US\$ M
Owners Engineer	<i>Annex – 15 - 17</i>	28.20
Special Technical Studies	<i>Annex – 18</i>	6.17
Revised Feasibility Study 2016	<i>Annex – 19</i>	18.76
Independent Engineer		1.00
Reopener Verifier under PPA		1.30
Technical Consultant for approval from Govt. of China	<i>Annex – 20</i>	1.26
CSMS-Land survey	<i>Annex – 21</i>	0.05
Technical Study on EIA & RAP	<i>Annex – 22</i>	0.16
Total		56.89

- Selection Process of Owner's Engineer**

A tendering agency Three Gorges International Trading Company was entrusted by Kohala Hydropower Company Private Limited to carry out the ICB for the consulting services for 1,124 MW Kohala hydropower project.

RFP was issued on Chinese and Pakistan media on 15th of April 2016. Copies of advertisement are attached as Annex 15. In response seven (7) parties purchase the RFP but only following five (5) parties submitted the tender.

Description	
MWH International, Inc.(USA)& Powerchina Huadong Engineering Corporation Limited (China)	MWH International, Inc. (MWH)
Lahmeyer International GmbH (Germany) & Changjiang Survey Planning Design and Research Co., Ltd (China)	Lahmeyer International GmbH
Fichtner GmbH & Co. KG (Germany) & Powerchina Zhongnan Engineering Corporation Limited (China)	Fichtner GmbH & Co KG
Matt MacDonald Limited (UK) & Powerchina Chengdu Engineering Corporation Limited (China)	Mott MacDonald Limited (MM)
SMEC International Pty Ltd (Australia) & Shanghai Investigation, Design & Research Institute Co., Ltd., (China) & Kunming Engineering Corporation Limited (China) & Engineering General Consultants EGC (Pvt.) Limited (Pakistan)	SMEC International Pty Ltd

Tender opening ceremony was held by 15:00 on 3rd of June 2016 (Beijing Time), Meeting Room 614, Building B, China Three Gorges Corporation, No.1 Yu Yuantannan Road, Haidian District, Beijing.

Tender Evaluation Process

Two stage comprehensive methodology was adopted to evaluate the tenders in terms of their quality and service cost tender evaluation process was carried out: Tender evaluation report is attached as (Annex 16)

Stage 1: Responsiveness Evaluation:

All bidders were evaluated for the responsiveness of the respective bids, which was considered a prerequisite for evaluation in stage 2. All Five (5) tenderers were substantially responsive to the requirements of RFP in terms of completeness, experience, competence and financial capacity.

Stage 2: Evaluation of Technical Proposal and Financial Proposal:

Final scoring of the tenders were done only if technical proposal obtain a minimum score of 75% and minimum 60% of the score simultaneously. Only if the Technical Proposal obtains a minimum total score of 75% and a minimum single item score of 60% simultaneously, it will be valid towards the final score.

The tender evaluation committee awarded following technical scores:

No.	Evaluated Item	Score	Tenderer				
			MWH	Lahmeyer	Fichtner	MM	SMEC
1	Qualification	150.00	123.56	141.00	139.67	127.56	137.33
2	Methodology	450.00	394.78	420.78	251.67	355.00	410.44
3	Staff (Key Experts)	400.00	289.78	362.89	256.67	323.66	318.67
	Total	1000.00	808.11	924.67	648.00	806.22	866.44

Fichtner has failed the technical evaluation for reaching neither the minimum of single item score (60%) nor the minimum of total score (75%). The other four (04) tenderers (MWH, Lahmeyer, MM and SMEC) have satisfied all the criteria and passed the technical evaluation.

The tender evaluation committee awarded following financial scores:

No.	Tenderer	Tender Price	Evaluated Tender Price (USD)	Financial Proposal	Financial Proposal Ranking
1	MWH	26,426,639.00	26,426,639.00	89.10	2
2	Lahmeyer	27,043,828.02	27,043,828.02	87.07	3
3	MM	23,547,352.00	23,547,352.00	100.00	1
4	SMEC	31,740,649.00	31,740,649.00	74.19	4

Tender Evaluation Committee commenced the Financial Proposal Evaluation with a general review of computational errors, which were found nonexistent in any of the four (04) financial proposals. In other words, the original Tender Price is equivalent to evaluate Tender Price.

Following final scores were awarded, which comprise of 55% weightage to technical Score and 45% weightage to financial score.

No.	Tenderer	Technical Proposal Score	Financial Proposal Score	Final Score	General Ranking
1	MWH	80.81	89.10	84.54	3
2	Lahmeyer	92.47	87.07	90.04	1
3	MM	80.62	100.00	89.34	2
4	SMEC	86.64	74.19	81.04	4

Based on above evaluation, Lahmeyer International GmbH was declared winner and signed Owner's Engineer Contract. (Annex 17)

This head include USD 24.93 million for feasibility studies undertaken by the Sponsors after issuance of the LOI as follows:

- a) The **2010 Feasibility Study** - After issuance of the LOI, CWE commenced updating of the SMEC's Feasibility Study with the emphasis on studies and analysis of sediment and possibility of using tunnel boring machine which was monitored & approved by the PPIB's Panel of Expert (the "POE") comprising of members from NTDC, WAPDA & GOAJK (the "**2010 Feasibility Study**"). On July 19th, 2011 PPIB conveyed the approval of the Feasibility Study to the

Company.

- b) Supplemental Special Subject Technical Studies to FS 2010, 2012 – After review of the 2010 Feasibility Study and different technical factors of the Neelum Jhelum Hydropower, Project Sponsors were not certain on following key areas, which can have impact on development of the Project. The issues mainly include as follows (Annex – 18):
- i. the impact of HFT active faults on the project is not clear;
 - ii. natural building materials reserves required for the construction are insufficient;
 - iii. the overall depth of preliminary feasibility study is not enough;
 - iv. this is lack of necessary Special subject report to support the feasibility study

In view of above following additional special subject technical studies was carried out by BIDR China in 2012.

- i. Surveying Report
 - ii. Study of desilting basin
 - iii. Study of impact of HFT Fault on Project and countermeasures
 - iv. Study of Constructing Headrace Tunnel Using New TBM
 - v. Study of Constructing Headrace Tunnel Using TBM from Neelum-Jhelum HPP
 - vi. Overall Sedimentation Model Test Report
 - vii. Overall Hydraulic Model Test Report
 - viii. Geological and Geotechnical Report
- c) As per the Chinese regulations all the technical feasibility study required to be reviewed and vetted by the China Water Conservancy & Hydropower Engineering Consulting Co., Ltd. as part of the approval from the Government of China including reviewing technical study made in 2012-2013 and revised feasibility study. Finally the approval of the Government of China was provided to the Company on September 30, 2016.
- d) **The 2016 Revised Technical report - Based on the requirement provided by the PPIB in September 2014** the Company carried out a revision of Feasibility study through M/s Befang Investigation, Design & Research Co. (the “BIDR”) China (Annex – 19). This feasibility study was approved by POE and communicated to the Company vide Letter No 1(101) PPIB-Kohala/16/PRJ/O-46915 dated June 9, 2016.

7.5 Environment and Ecology

The Company is committed to and is cognizant with its environmental obligations under Pakistan and AJK laws as well as environment and safeguard policies of IFC.

Company is proud of IFC's being an equity partner of its parent, and is fully committed to abide by the IFC's Performance Standards on Environmental and Social Sustainability during the implementation, construction and operation of the Project, which is also a mandatory requirement of IFC.

The environment cost includes but is not limited to proper treatment of water supply, sewerage, site protection and rehabilitation program and monitoring programs; proper action of mitigating environment impacts from the project (such as loss of community infrastructure, cultural property etc.); proper maintenance and improvement of environment status of the area during the construction phase of the project, all of which shall be carried out following the criteria of IFC's Performance Standard and to the satisfaction of IFC.

Total cost under this head is US\$ 5.76 Million.

Description		US\$ M
Implementation of Biodiversity Management Plan (Capital & recurring cost)		
	Biodiversity Protection	1.29
	Institute for Research on River Ecology	0.38
	Monitoring and Evaluation of IRRE & WMP	0.21
	Monitoring and Evaluation of Protection	0.67
	Watershed Management	1.31
Total		3.85
Implementation of Stakeholders Engagement Plan		
	Admin cost for Stakeholder engagement	0.47
	Communication & Printings	0.09
	Meetings, Workshops & Resettlement Ceremony	0.13
	Training & Capacity building for affected	0.47
Total		1.17
Monitoring & Audit Cost		
	External Monitoring & Auditing	0.53
	Internal monitoring	0.04
Total		0.56
Capacity Building/Trainings of HSE Staff & Management		
	International Trainings	0.13
	Local Trainings	0.04
Total		0.17
Grand Total		5.76

The key items are discussed below as per requirement of approved ESIA study from EPA AJK and IFC:

▪ **Biodiversity Management Plan (the “BMP”)**

According to the ESIA, the Study Area for the Kohala Project falls in Critical Habitat as defined in the IFC PS6 mainly due to presence of the Critically Endangered Kashmir Catfish and Nalbant’s Loach. The Project is required to achieve a ‘net gain’ in the population of Kashmir Catfish under IFC PS6 on ‘Biodiversity Conservation and Sustainable Management of Living Natural Resources’ when a project is located in Critical Habitat.

Accordingly, Biodiversity Management Plan (BMP) has been prepared as a part of the ESIA to ensure that the protection measures as assumed in the EFlow assessment are implemented to protect fish fauna in general and Kashmir Catfish such that achievement in net gain in population of Kashmir Catfish is achieved

Therefore, under the requirement of IFC PS 6, legal obligations of Pakistan and AJK laws / regulation pertaining to wildlife protection and conservation like the National Conservation Strategy, AJK Wildlife Ordinance 2013 and Guidelines for Sensitive and Critical Areas adopted by GoAJK along with Fisheries Act the Company has developed a BMP as part of the ESIA to meet the legal requirements and fulfill its commitments to International Conventions and Treaties to which Pakistan is signatory. Since this is under the legal obligations for project execution therefore, this cost will be part of the tariff proposal for the Project. The same has already been approved by GOAJK Environmental Protection Agency.

River Basin Wide Approach:

Based on the Cumulative Impact Assessment of the project, the BAP also includes basin wide measures for protection of biodiversity recommended in the Cumulative Impact Assessment (CIA) of the Project that are important for the protection of biodiversity in the long term. These include:

- **Establishment of an Institute for Research on River Ecology**

The CIA recommends research and development for selection and installation of fish passages suited to local species, river conditions, and dam designs, captive breeding and restocking of fish of conservation importance that are impacted by hydropower projects, assessment of impacts on river biodiversity at sub-basin level, use of environmental flow models such as DRIFT to assess cumulative impacts of hydropower projects, and genetic studies to determine and mitigate risk of in-breeding caused by barriers created by dams. The proposed institute will help the project owners in maintaining ecological databases and research and analysis capabilities that will benefit them individually by lowering their environmental management costs. The role and contribution of KHCL in establishment and operation of this institution is described in the BAP. The financial contribution of KHCL as provided in the BMP is given in table above.

- **Establishment of Watershed Management Program**

The Watershed Management Program (WMP) will primarily focus on improvement of water quality in the basin that is critical for protection of biodiversity in the long term. The institutional and financial model for setting up watershed management institutions will be similar to that proposed for the Institute for Research on River Ecology. The support provided by KHCL and project owners in this case, however, will be limited, as additional support and resources will be mobilized from the participating government departments, which will include forests, wildlife, agriculture, and irrigation. Action areas recommended in the CIA include land use management and reforestation to reduce erosion and risk of landslides and to meet community needs for fuel wood and timber, management of water use, and control of water quality. The financial contribution of KHCL as provided in the BMP is given in table above.

In addition to the above requirements, AJK EPA NOC (Annex – 23) requires, construction of five water bodies downstream of the dam in order to rule out the chances of its encroachment, minimize the possibilities of change in microclimatic conditions, providing facilities for recreational activities, promote tourism and enhancing livelihood opportunities and to restore the aesthetics of the river.

In lieu of the above condition, KHCL provided rationale to AJK EPA that construction of water bodies downstream of the dam is not feasible technically due to following reasons;

- i) Due to sedimentation any water body created in the riverbed will get filled up with sediment deposited in flood period.
- ii) Because of flow of Himalayan River any structure constructed will be smashed away during floods

However, AJK EPA was of the view that the condition will be reviewed after outcome of the feasibility study of construction of water bodies in case of NJHPP, which is expected to be completed by one year. Additionally, the study will also need to be reviewed and vetted by the company through international independent expert to ascertain assumption and methodology provided in study. Therefore, the conditional will be applicable if it meets technical and financial viability.

The cost of Water Bodies cannot be estimated at the moment and therefore not included in the Project Cost. However, after the completion of study if AJK EPA requires Company to construct the water body to fulfill the requirements of NOC the same will be claimed at COD.

7.6 Land Acquisition and Resettlement Cost

The cost associated with acquisition of land, procurement of land through private negotiation, compensation for resettlement to the inhabitants of the area to be affected by the development of the Project, compensation for removal of trees and crops, cost of social welfare of the local community,

income generation and community support program, recreational facilities and other allied costs, to be incurred by the Project Company including cost of consultants and legal fees pertaining to land acquisition and resettlement, have been estimated and accounted for under this head. Cost under this head amounts to US\$ 51.92 Million as follows:

Land Acquisition and Resettlement Cost	US\$ M
Land Acquisition	33.64
Up-lift Package/CIP	5.70
House Compensation	5.21
Trees / Plants / Crops Compensation	4.37
Infrastructure Compensation	1.36
Administration & Monitoring Cost	0.91
Resettlement Allowances	0.56
Livelihood Restoration	0.17
Total	51.92

As part of the construction activities for the Kohala Project there will be relocation of personnel from their homes and possible displacement of small business shops etc. this will be direct impact on the people and they are to be compensated as per the Land Acquisition Act of 1894, which provides the guidelines for acquisition as well compensation mechanism for the affected personnel. Land acquisition has been one of the major costs on all hydro development projects in the country like the Neelum Jhelum, Tarbela and Mangla dams therefore, in line with requirements of the law of the land and precedence of the same in the power industry we have taken the resettlement and compensation costs as part of the tariff proposal for this Project. The relevant notifications issued by Government of AJK are enclosed as Annex – 24.

7.7 Project Development Cost

This head includes the cost incurred for development of Project and includes all costs, fees and expenses incurred or to be incurred for such purpose. This cost head amounts to USD 77.88 Million and includes the following (supporting documents are attached at Annex – 25):

Project Development Cost	US\$ M
Salaries, Wages & Benefits	39.79
Service Charges	8.50
L/c / Bank Guarantees charges	5.59
House Rental Expenses	3.08
Office Rentals	3.46
Project Advisors	4.15
Travelling, Boarding & Lodging	2.82
Office Administration Costs	2.55
Site office Expenses	1.21
Certification Fee	1.27
Assets Acquisition Cost	1.76
Training & Development	0.58
Meeting, Conferences & Company Events	0.68
Security Cost	1.32
Cost of PR and Media Management	0.14
Bank Charges	0.24
Audit Charges	0.09

Misc. Consultancy	0.37
HSE related costs	0.28
Total	77.88

Sound project development is key to the success of any project, and is absolutely critical for such mega project as the Project development activities commenced from 2008 and has taken several man months of time and efforts of various professionals and staff. Due to projects' complexity this will continue all the way to COD and throughout the term of the PPA. Company needs to ensure it is able to hire and retain both Pakistani as well as Chinese top professionals and has a ready talent pipeline to manage this mega project, and has this allocated a USD 39.79 million upto COD.

An allocation of USD 8.5 million has also been made for Service charges payable to CSAIL & CTGI, which will be utilized for support in obtaining Government approvals, Tendering support, financing, Sinasure coverage, construction Insurances, functional support for management of construction, Reimbursement of Chinese employee insurance & staff related costs other than salary, maintain accounting and reporting function and support from Government of China, CTG and CTGI etc.

During the period from financial close to COD, Company will also need to establish L/Cs in favour of the lending banks as part of their security, and allocation of USD 5.59 million has been made for various charges of the same.

Project advisors comprise of Tax Advisors, Tariff Advisors, Land Acquisition Advisor, Financial Advisor etc. and allocation of USD 4.15 million has been estimated for them.

The remaining items include standard items such as house and office rentals, travelling & boarding, office admin costs etc. which is considered reasonable given the long development period from 2008 to 2024

7.8 Insurance During Construction

Insurance during Construction cost covers the insurance cost of the Project's assets during the construction period. These cost estimates i.e. 3% of the EPC cost have been developed based on the fact that this project has longer construction period. The most recent tariff determinations issued by NEPRA were for 2.75% on a construction period of 5 years. This Project has a construction period of 6.5 years and accordingly the Authority is hereby requested to allow Insurance during Construction at 3% of EPC cost.

The Project, in view of the practices set by other IPPs in Pakistan and in accordance with the requirements typically set out by the Lenders funding the Project, intends to procure the following insurances during the construction phase of the Project:

- (a) Construction All Risk Insurances (CAR);
- (b) CAR Delay in Start-up Insurance;
- (d) Marine and Inland Transit Insurance;
- (e) Marine - Delay-In Startup Insurances; and
- (f) Comprehensive General Liability.

Total cost under this head amounts to US\$ 53.80 Million and comprise of following:

Description	US\$ M
Contractors' All Risks (including TPL)	45.31
Loss of Revenue (following C.A.R.)	4.62
Marine Cargo	0.72
Loss of Revenue (following Marine incident)	3.15
Total	53.80

The aforesaid estimates of insurance during construction are based on Quotation received from a leading Chinese Insurance Broker “Ping AN” (Annex 26) keeping in view the uncertainty about the security and geo-political situation in the region and site specific risks like tunneling, geographical conditions etc. According to the risk evaluation of the risk database of Munich Re, the natural disaster risks that Kohala Project may face have the following characteristics:

1. **High level of risks:** the natural disaster risks on the powerhouse site and dam site are high generally, with a rating of Extreme by Munich Re.
2. **Multiple types of risks:** the natural disasters on the powerhouse site and dam site primarily include earthquakes, lightning, hails and flashfloods.
3. **Difference in risk on the powerhouse site and dam site:** the risks are higher on the dam site than the powerhouse site as they reach the highest risk zone of Munich Re, i.e. Zone 4; the risks on the powerhouse site reach the Zone 3. The primary reason is that the two sites are located in two directions of a fault. The dam site, as located above the fault, has a higher risk of earthquake.

The natural disaster risk evaluation of Munich Re is famous in the insurance industry and taken by underwriters as an important reference for quotation. Meanwhile, it is also an instrument for the insured to identify natural disaster risks during risk management.

Additionally, there are Twin headrace tunnels having a diameter of 8.5m and a length of about 17.4km. The headrace tunnels have Class III surrounding rocks primarily, Class IV surrounding rocks secondarily and Class II and V surrounding rocks in a few areas. According to prior geological survey and the excavation work of N-J project, the Project's primary geological problems include water burst, soft rock deformation and rock burst. These all factor contributes in distinctive challenges in the project for which underwriters expects higher premium.

7.9 Legal Fee and Charges

This head pertains to legal fees and charges associated with engagement of international and domestic law firms for advice on all legal aspects of the Project and Stamp duty on financing agreements etc. Given long implementation period of the Hydro projects, the services of legal advisors will be required throughout the development and construction period to assist in connection with the negotiation, execution and administration of the following agreements (Annex – 27):

- EPC Contracts;
- Implementation Agreement (IA) with both with GOP and AJK Entities;
- Power Purchase Agreement (PPA);
- The Water Use Agreements;
- Financing Agreements, Security Agreements, including but not limited to the Direct Agreements between all counter parties to all project agreements;
- Land Acquisition / Lease Agreement
- Project site Agreements and Other Services

The cost requested under this head is US \$ 12.57 million, which is generally allowed under this head to other Projects in Pakistan.

In order to encourage investment in private sector hydropower projects in AJK the Government of AJK through its Board of Revenue issued notifications in year 2006, whereby the Board of Revenue fixed a maximum limit of Rs. 0.100 Million per document as Stamps Duty payable under Section 9(a) of the Stamp Act 1899 and also fixed a maximum limit of Rs. 0.100 Million as Registration fee chargeable under Section 78 of the Registration Act, 1908, on execution of any instrument by or on behalf of a Hydro Power Developer Company in favor of a Banking Company for securing loan for making investment in

any project of Hydro Power Generation.

However, in 2016 Government of AJK has withdrawn the above-mentioned notification, and now thereby reinstating the stamp duty and registration fee is applicable as per the prevailing rates, the incidence of which is estimated at USD 11.6 Million.

7.10 Duties and Taxes

The Project Company has calculated taxes and Customs Duty at US\$ 28.51 Million as follows:

- a) Custom Duty @ 5.00% (Five Percent) has been assumed on import of machinery, equipment, goods, spares and materials for the Project, in accordance with the Policy. In case a higher rate of Custom Duty is levied the same shall be charged and adjusted as per actual at COD.
- b) Sindh Infrastructure Development Surcharge @ 1.15% (one point one five percent) of the imports for the Project has been assumed. The chargeability of Sindh Infrastructure Development Surcharge (the SIDS) is based on (i) the weight of the imported equipment / items, (ii) the distance of the Site from the port and (iii) use of equipment in Sindh.
- c) No other taxes at the import stage including the Sales Tax (presently exempted) have been assumed in the tariff petition.
- d) Furthermore no AJK taxes have been assumed in the tariff petition. In case Project is required to pay any such taxes, Authority is requested to allow them as part of the Project Cost.

In case there is any change in any taxes or duties above, or additional taxes, fees, excise duty, levies etc, are imposed, the same shall be treated as pass through item and the Project cost and the Reference Tariff will be adjusted accordingly. Given below is the detail of costs under this head (Annex – 28):

Duties and Taxes		US\$ M
Custom Duties		23.18
Sindh Infrastructure Development Surcharge		5.33
Total		28.51

7.11 O & M Mobilization

Cost of O&M mobilization has been budgeted at USD 14.15 Million. This did not form part of the Feasibility Stage Tariff, however, for ensuring a seamless transition from the construction period into the operation period the O&M contractor needs to be mobilized on site at least 15 months prior to COD. During the mobilization period the O&M contractor shall witness and record the testing and commissioning of all key equipment (for Operational Period purposes), receive trainings from the EPC/OEM, perform taking over procedures at COD, plan operations as per the operating manuals for each equipment provided by EPC/OEM. Given below are the costs under this head (Annex – 29):

O&M Mobilization		US\$ M
Vehicle		2.12
Administrative Cost		3.55
Travelling		1.41
Salaries Cost		7.07
Total		14.15

7.12 Financial Fees and Charges

The Project is to be financed through a mix of foreign and local loan. Financial Fee & Charges include costs related to debt financing of the Project. These costs include fees and charges related to lenders up-front fee, commitment fee, Administration / Monitoring fee, and other financing fees cost and charges.

NEPRA has set a benchmark of 3% of the loan amount and consistently allowed financial charges based on the same benchmark in all the projects. Therefore, financial charges requested based on the

benchmark followed by NEPRA i.e. 3% of the debt amount excluding the impact of Sinasure, IDC and financial fee and charges.

7.13 Sinasure Fee

Sinasure is China's official export credit insurance agency, offering export credit insurance and overseas investment insurance. The policy covers equity and debt portion of the project and is intended to provide the insured with risk guarantee when they suffer economic losses because of war, currency exchange ban, requisition, or breach of contract by the government or related counterparts in countries where the insured have made investments. It is designed to support and promote Chinese companies and financial organizations to invest and lend outside China.

According to the requirement of the Chinese government, state-owned enterprises such as CTG, undertaking overseas investments are required to acquire overseas investment insurance from Sinasure; therefore, it is essential that the Equity investment is secured for political risks by Sinasure. Similarly loans arranged from Chinese Banks (such as in the case of this Project) will need to be covered under the Sinasure insurance. Given the dynamics of the Project and its location, the loans will require an acceptable security structure, for political and commercial risks.

In order to comply with the requirement, Company has opted for Buyers Credit Policy (Annex – 30) for the loans, which provides cover for Political Risks and Commercial Risks. Being one of actively promoted project of the CPEC, the Project has been allowed a Sinasure rate @ 7%. Given that (1) payments made to Sinasure are currently subject to 20% withholding tax at source and (2) as per terms preliminary agreed with the Sinasure which require premium to be received after tax deduction must be the same as those that would have been received had there been no tax, the rate has been grossed up to 8.75% ($7\% / (1 - 20\%)$). The Sinasure fee is computed based on the following parameters:

Policy	Buyer's Credit
Total Loan	1,932.12
Premium Rate (Excl. Tax)	7%
Withholding Tax Rate	20%
Premium Rate (Incl. Tax)	8.75%
Total Premium (US \$ in Millions) – Construction	169.06
Total Premium (US \$ in Millions) – Operations	N/A

For Equity Investment, Company has opted for Overseas Investment Policy (Annex – 31) and it is intended to provide the insured with risk guarantee when they suffer economic losses because of war, currency exchange ban, requisition, or breach of contract by the government or related counterparts in countries where the insured have made investments. Being one of the project in Actively promoted list of CPEC the Project has been allowed a concessional Sinasure rate @ 0.47% per annum (net of taxes). Given that (1) payments made to Sinasure are currently subject to 20% withholding tax at source and (2) as per terms preliminary agreed with the Sinasure which require premium to be received after tax deduction must be the same as those that would have been received had there been no tax, the rate has been grossed up to $0.59\% * (0.47\% / (1 - 20\%))$. The fee charged shall apply during construction as well as operations period of the Project, in accordance with the following terms:

Policy	Overseas Investment Insurance
Total Equity	828.05
Premium Rate (Excl. Tax)	0.47%
Withholding Tax Rate	20%
Premium Rate (Incl. Tax)	0.59%
Total Premium (US \$ in Millions) – Construction	22.85
Total Premium (PKR/KW/M) – Operations*	34.05

Authority is requested to allow Sinasure both on equity and debt, as both are mandatory for Chinese investment in Pakistan.

7.14 Interest During Construction

The Interest during Construction (“IDC”) has been calculated at US \$ 421.05 Million on the terms offered by Chinese banks & Local banks (Annex – 32). The IDC has been calculated based on the following assumptions:

	Foreign	Local
Proportion	85%	15%
LIBOR / KIBOR	*0.60%	6.0%
Spread	460 bps	350 bps
Grace period – IDC	6.5 years	6.5 years
Repayment	Semi-Annual	Semi-Annual

**This is the latest base rate used by NEPRA in its recent determination in January 2017. In Karot NEPRA used 0.40% while in Suki Kinari it was 0.41%*

Actual IDC, however, shall be subject to change depending on the fluctuations in (a) base rate (6-month LIBOR & 6-month KIBOR); (b) funding requirement (draw-downs) of the Project during the construction period; (c) changes in Project Cost including changes due to Re-Openers, Taxes and Duties; (d) and variations in PKR / USD exchange rate.

Construction period assumed for IDC calculation is 6.5 years, which is approved by PoE and agreed with EPC Contractors.

Section 08: Funding Arrangement

The Project shall be financed at debt to equity ratio of 70:30 as approved in the feasibility stage. The total Project Cost stands at USD 2,760.17 Million, which requires debt injection of US\$ 1,932.12 Million and equity amounting to US\$ 828.05 Million. It's being the largest financing being undertaken in the private sector in Pakistan and Political risk associated with AJK, is a challenging task. As stated earlier, the Sponsors and KHCL had approached the major multilaterals for financing of the Project, however, due to the geopolitical situation and location of the Project in the State of AJK, they have declined to finance the Project.

8.1 Debt Financing

Due to the size of the Project, the large quantum of financing required, the long tenure of debt and the political risk associated with AJK, the Company has created a special Board Finance Committee and a team at its head office to tackle this difficult task.

Based on present market conditions, the Company is aiming for a mix of foreign and local debt financing in the proportion of 85:15 respectively. However, actual debt proportion may change based on Local banks appetite and other factors, in that case the adjustment in the Project Cost and the relevant tariff components are requested to be allowed accordingly.

The Foreign portion of the Project's financing will be funded by Chinese Financial Institutions lead by China Development Bank, whereas a syndicate of local banks lead by Habib Bank will undertake the local portion of the financing.

The financing spread applicable over LIBOR/KIBOR for this Project as indicated by the lending institutions in their term sheets is higher than normally customary in Pakistan for such projects. This is mainly due to the following reasons:

- a) Project is located in AJK.
- b) According to Moody's Pakistan faces credit challenges that include a high government debt burden, weak physical and social infrastructure, fragile external payments position and high political risk. Although Moody's has given "B3 Stable" rating, however material widening of the fiscal deficit and deterioration in external payments position may result in a downgrade. IMF in its recent report has warned that macroeconomic stability gains have started to erode and could pose risks to economic outlook. Accordingly, since the external payments position is extremely weak, lenders have anticipated a downgrade resulting in a higher spread.
- c) Local Banks in Pakistan do not have an appetite to finance projects, which have a tenure of over 18 years with 6.5 years of construction period. This is the first time they have agreed to do so but at a higher rate which essentially covers the longer tenure of the loan and the construction period.
- d) Chinese banks have also increased the rate due to the risks associated to the Project being in AJK and having a longer construction period, which includes construction of long tunnels.

- e) Furthermore, due to the nature of the Project, lending institutions are requiring the sponsor to put up higher equity amount (Debt Equity 70:30) and enhanced amount of sponsor support for contingencies and cost overruns.

Based on the indicative and agreed term sheets (Annex 32) the key terms of financing are provided below:

Description	Foreign	Local
Banks	CDB	HBL
Currency	US\$	PKR
Tenure	18.5 years	18.5 years
Grace Period	6.5 years	6.5 years
Repayment Period	12 years	12 years
Base rate (6 Months - LIBOR/KIBOR)	0.60%	6.0%
Margin / Spread over Base rate	4.60%	3.50%
Repayment	Semiannual	Semiannual

Loans arranged will need to be covered under the Sinasure insurance. Given the dynamics of the situation, in order to work out an acceptable security structure, the loans will need to be secured for political and commercial risks.

Keeping in view the above factors, Company hereby requests approval of the above stated financing terms for the Project.

8.2 Equity Funding

The equity funding will be 30% of the Project cost as approved in the Feasibility stage tariff and as required by the lenders amounting to USD 828.05 Million. An amount of USD 31.03 Million has already been injected in KHCL by the sponsors to meet the costs incurred to date while a further amount of USD 129.65 Million is expected to be injected to achieve financial close, and the balance amount will be injected during the construction period of the Project. According to the requirement of the Chinese government, state-owned enterprises such as CTG, undertaking overseas investments are required to acquire overseas investment insurance from Sinasure. Therefore, it is essential that the Equity investment be secured for political risks.

8.3 Return on Equity (ROE), ROE During Construction and Equity Redemption

The Return on Equity ("ROE") and Return on Equity during Construction ("ROEDC") have been computed at 17% as approved in Feasibility Stage Tariff and as provided to all other hydropower projects in Pakistan. In view of the BOOT nature of the Project Equity Redemption ("ER") has also been included in the tariff after repayment of the debt as per NEPRA's Mechanism for Development of Tariff for Hydropower Projects.

Furthermore, as per NEPRA's Mechanism for Development of Tariff for Hydropower Projects, special Return on Equity on the amount of equity invested during 30 months prior to financial close has also been included in ROEDC.

Section 09: Operations Cost

The operational cost of the Project comprises of the operations and maintenance cost, water use charge and the cost of the operational period insurances to be incurred by the Company. Break-up of the same is provided hereunder:

	USD IN MILLION (PER ANNUM)
VARIABLE O&M	
- LOCAL	5.80
- FOREIGN	2.48
FIXED O&M	
- LOCAL	9.94
- FOREIGN	23.19
SUB TOTAL O&M COST	41.40
WATER USE CHARGE	20.87
INSURANCE COST	24.21
TOTAL OPERATIONS COST	86.48

9.1 Variable O&M Costs

The Variable O&M cost has been calculated based on a net average annual energy of 5,149 GWh, worked out based on the hydrological data of River Jhelum. Variable O&M is 20% of total O&M cost of the Project. This component caters for the cost of services rendered by the O&M operator that are dependent on the operation of the Project thereby determinable on a kWh basis. This component also includes cost associated with replacement of parts necessitated due to regular operation / normal wear and tear.

Percentage of local and foreign components is specified below along with indexations applicable on the same:

Sub-component	Percentage	Indexation
Local	70%	<ul style="list-style-type: none"> Pakistan CPI (General)
Foreign	30%	<ul style="list-style-type: none"> US CPI (All Urban Consumers) PKR / USD Indexation

9.2 Fixed O&M Costs

Fixed O&M is 80% of total O&M cost of the Project. Local portion of fixed O&M costs represents all costs expected to be incurred by the Project locally; these include costs associated with local staff, administrative expenses, corporate fees, audit fees, the O&M operator's fee chargeable in PKR, etc.

As elaborated in detail in Section 4 above, the shareholders of the Company are based outside Pakistan. Due to this reason, the senior management and core team employed by the Company will comprise of a large number of expatriates. Additionally, the fixed fees payable to the O&M operator (comprising of routine maintenance related costs, including but not limited to, visits by their foreign experts, import of routine replacement components, etc.) will also comprise of a foreign portion, which is charged under this head.

Percentage of local and foreign components are specified below along with indexations applicable on the same:

Fixed O&M	Percentage	Indexation
Local	30%	• Pakistan CPI (General)
Foreign	70%	• US CPI (All Urban Consumers) • PKR / USD Indexation

9.2.1 Maintenance Strategy

The Maintenance strategy to be adopted by the Operator during term of the Power Purchase Agreement is divided into four levels which is as follows:

a) Level-A maintenance

To overhaul the generating set in order to keep, rehabilitate or improve its performance.

b) Level-B maintenance

To dismantle, check and repair some defective equipment in the generating set. In Level-B maintenance, some items of Level-A maintenance or periodical rolling maintenance items may be performed according to assessment results of equipment operating conditions.

c) Level-C maintenance

To check, assess, repair or clean equipment of the generating set with focus on its wearing/aging conditions. In Level-C maintenance, a few parts may be replaced and defects may be remedied. Also other activities such as adjustment and preventive tests may be performed.

d) Level-D maintenance

To remedy any defects in the main equipment and auxiliaries while the overall generating set operates normally. In addition to defect elimination, part items of Level-C maintenance may be implemented in Level-D maintenance according to the assessment result of the equipment operating conditions.

9.3 Water Use Charge

This component represents the use of water charges payable to the AJK government. The same are determined as a function of the electricity generated (in per kWh) by the Project. Water Use Charge is included in tariff at the rate of PKR/0.425 kWh, i.e. the prevailing rate approved by ECC in its decision dated July 1, 2016 (Annexure 33). Previously NEPRA for other similar projects (Suki Kinari and Karot) had applied WUC at the then prevailing rate of PKR 0.150 /kWh. The new rate has a significant impact on tariff amounting to approx. PKR 0.275/kWh (US Cents 0.250/kWh). Any subsequent change in rate

of Water Use Charges as notified by the relevant Government Agency is requested to be allowed to the Company on actual basis.

9.4 Operational Phase Insurance Cost

The Company is required to maintain insurance covers during operations as per the terms of PPA and financing documents. Such insurance covers include Comprehensive Machinery Insurance, Business Interruption, Third Party Liability, and Terrorism etc.

Aforementioned insurances are required to be maintained throughout the life of the Project. As permitted under the Feasibility Stage Tariff determination, Company has requested that an annual insurance cost at a rate of 1.35% of the EPC cost be allowed (Annex – 34).

Section 10: Reference Tariff Table

The proposed Reference Tariff is a typical two-part tariff comprising of:

- Energy Purchase Price (“EPP”) for the energy generated and delivered to the power purchaser; and
- Capacity Purchase Price (“CPP”) based on the installed capacity taking into account historical hydrological data of River Jhelum.

10.1 Energy Purchase Price

The Energy Purchase Price (“EPP”) of tariff comprises of Variable O&M component and Water Use Charge. The EPP is payable against each kWh of energy generated and delivered to the power purchaser as measured by the Metering System at the Interconnection point.

10.2 Capacity Purchase Price

The Capacity Purchase Price (“CPP”), specified in PKR / kW / Month, is based on the net plant capacity specified under this Tariff Proposal – 1,112.8 MW. The monthly billable amount of CPP will be determined based on the tested capacity established during the annual capacity test. This is a fixed monthly payment payable to Company irrespective of the actual hydrology and actual dispatch of the Complex. Hydrological risk shall be borne by the power purchaser.

The CPP will comprise of Fixed O&M (local), Fixed O&M (foreign), Return on Equity, Return on Equity during Construction, Equity Redemption, Insurance During Operation and Debt Servicing – comprising of Principal and Interest

Year	Variable O&M		Water Use Charge	ENERGY CHARGE	Fixed O&M		Insurance	Retrun on Equity	ROEDC	Foreign Loan		Local Loan		CAPACITY CHARGE	TOTAL TARIFF	
	Foreign	Local			Principal	Interest				Principal	Interest	PKR/kWh	US ¢/kWh			
	PKR/kWh				PKR/kW/M											
1	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	797.6980	660.3295	108.1862	213.6796	4,113.8797	11.2623	10.7414
2	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	839.7175	618.3099	118.7080	203.1578	4,113.8797	11.2623	10.7414
3	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	883.9505	574.0770	130.2531	191.6127	4,113.8797	11.2623	10.7414
4	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	930.5134	527.5140	142.9211	178.9448	4,113.8797	11.2623	10.7414
5	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	979.5292	478.4983	156.8210	165.0448	4,113.8797	11.2623	10.7414
6	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,031.1269	426.9006	172.0729	149.7930	4,113.8797	11.2623	10.7414
7	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,085.4425	372.5850	188.8080	133.0578	4,113.8797	11.2623	10.7414
8	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,142.6193	315.4082	207.1708	114.6951	4,113.8797	11.2623	10.7414
9	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,202.8079	255.2196	227.3194	94.5464	4,113.8797	11.2623	10.7414
10	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,266.1670	191.8605	249.4277	72.4382	4,113.8797	11.2623	10.7414
11	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,332.8636	125.1639	273.6861	48.1798	4,113.8797	11.2623	10.7414
12	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,105.3294	740.2639	1,403.0735	54.9539	300.3037	21.5621	4,113.8797	11.2623	10.7414
13	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,401.4739	6.8215	6.5059
14	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,399.3518	6.8160	6.5007
15	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,397.2296	6.8105	6.4954
16	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,395.1074	6.8050	6.4902
17	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,392.9853	6.7994	6.4849
18	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,390.8631	6.7939	6.4797
19	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,388.7410	6.7884	6.4744
20	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,386.6188	6.7829	6.4692
21	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,384.4966	6.7774	6.4639
22	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,382.3745	6.7719	6.4587
23	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,380.2523	6.7664	6.4534
24	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,378.1302	6.7609	6.4482
25	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,376.0080	6.7554	6.4429
26	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,373.8858	6.7499	6.4377
27	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,371.7637	6.7444	6.4324
28	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,369.6415	6.7389	6.4272
29	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,367.5194	6.7334	6.4219
30	0.0506	0.1180	0.4250	0.5936	182.0542	78.0232	190.1167	1,174.9391	740.2639	-	-	-	-	2,365.3972	6.7279	6.4167
Levelized Tariff															10.0220	9.5585

10.4 Reference Debt Servicing Schedule – Foreign Financing

Period	Foreign Loan					Annual Principal Repayment	Annual Interest	Annual Debt Servicing Rs/Kwh
	Outstanding	Principal	Interest	Installment				
				Per Period	Per Annum			
	US\$ M					(Rs./KW/Month)		
	1,642.3012							
1	1,592.1579	50.1434	42.6998	92.8432				
2	1,540.7108	51.4471	41.3961	92.8432	185.6864	797.6980	660.3295	1,458.0275
3	1,487.9261	52.7847	40.0585	92.8432				
4	1,433.7690	54.1571	38.6861	92.8432	185.6864	839.7175	618.3099	1,458.0275
5	1,378.2038	55.5652	37.2780	92.8432				
6	1,321.1939	57.0099	35.8333	92.8432	185.6864	883.9505	574.0770	1,458.0275
7	1,262.7017	58.4921	34.3510	92.8432				
8	1,202.6888	60.0129	32.8302	92.8432	185.6864	930.5134	527.5140	1,458.0275
9	1,141.1155	61.5733	31.2699	92.8432				
10	1,077.9414	63.1742	29.6690	92.8432	185.6864	979.5292	478.4983	1,458.0275
11	1,013.1246	64.8167	28.0265	92.8432				
12	946.6227	66.5019	26.3412	92.8432	185.6864	1,031.1269	426.9006	1,458.0275
13	878.3917	68.2310	24.6122	92.8432				
14	808.3867	70.0050	22.8382	92.8432	185.6864	1,085.4425	372.5850	1,458.0275
15	736.5616	71.8251	21.0181	92.8432				
16	662.8690	73.6926	19.1506	92.8432	185.6864	1,142.6193	315.4082	1,458.0275
17	587.2604	75.6086	17.2346	92.8432				
18	509.6860	77.5744	15.2688	92.8432	185.6864	1,202.8079	255.2196	1,458.0275
19	430.0946	79.5913	13.2518	92.8432				
20	348.4339	81.6607	11.1825	92.8432	185.6864	1,266.1670	191.8605	1,458.0275
21	264.6500	83.7839	9.0593	92.8432				
22	178.6877	85.9623	6.8809	92.8432	185.6864	1,332.8636	125.1639	1,458.0275
23	90.4904	88.1973	4.6459	92.8432				
24	0.0000	90.4904	2.3528	92.8432	185.6864	1,403.0735	54.9539	1,458.0275

10.5 Reference Debt Servicing Schedule – Local Financing

Period	Local Loan					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Outstanding	Principal	Interest	Installment				
				Per Period	Per Annum			
	US\$ M					(Rs./KW/Month)		
	289.8179							
1	283.0887	6.7292	13.7663	20.4955				
2	276.0399	7.0488	13.4467	20.4955	40.9911	108.1862	213.1701	321.0984
3	268.6562	7.3836	13.1119	20.4955				
4	260.9218	7.7344	12.7612	20.4955	40.9911	118.7080	202.6734	321.0984
5	252.8201	8.1017	12.3938	20.4955				
6	244.3335	8.4866	12.0090	20.4955	40.9911	130.2531	191.1558	321.0984
7	235.4438	8.8897	11.6058	20.4955				
8	226.1319	9.3120	11.1836	20.4955	40.9911	142.9211	178.5181	321.0984
9	216.3776	9.7543	10.7413	20.4955				
10	206.1600	10.2176	10.2779	20.4955	40.9911	156.8210	164.6513	321.0984
11	195.4571	10.7029	9.7926	20.4955				
12	184.2458	11.2113	9.2842	20.4955	40.9911	172.0729	149.4358	321.0984
13	172.5019	11.7439	8.7517	20.4955				
14	160.2002	12.3017	8.1938	20.4955	40.9911	188.8080	132.7406	321.0984
15	147.3142	12.8860	7.6095	20.4955				
16	133.8161	13.4981	6.9974	20.4955	40.9911	207.1708	114.4216	321.0984
17	119.6768	14.1393	6.3563	20.4955				
18	104.8659	14.8109	5.6846	20.4955	40.9911	227.3194	94.3210	321.0984
19	89.3515	15.5144	4.9811	20.4955				
20	73.1002	16.2513	4.2442	20.4955	40.9911	249.4277	72.2655	321.0984
21	56.0769	17.0233	3.4723	20.4955				
22	38.2450	17.8319	2.6637	20.4955	40.9911	273.6861	48.0649	321.0984
23	19.5661	18.6789	1.8166	20.4955				
24	(0.0000)	19.5661	0.9294	20.4955	40.9911	300.3037	21.5107	321.0984

Section 11: Adjustments

One-Time Adjustments

The proposed EPC Stage Reference Tariff for the Project has been computed based on the above stated costs and on the basis / assumptions as discussed in this Tariff Proposal. The Project Cost and the Reference Tariff as determined pursuant to this petition shall be subject to adjustment for the following Cost Reopeners:

- a) Adjustment for Sales Tax on EPC onshore
- b) Adjustment for Civil Cost Escalation
- c) Adjustment for Cost Variation due to Change in Rock Classification
- d) Adjustment for Variation in Cost of Land Acquisition and Resettlement costs
- e) Adjustment based on Actual Duties & Taxes
- f) Adjustment in Project Cost due to variation in US\$ / Rupee parity
- g) Adjustment in Project Cost based on Actual Interest During Construction
- h) Adjustment in Return on Equity and Return on Equity During Construction based on actual equity injection
- i) Adjustment in Principal Repayment and cost of Debt
- j) Adjustment of Insurance During Construction
- k) Adjustment of Security Cost
- l) Adjustment in Sinosure Fee based on actuals
- m) Adjustment of Financial Charges
- n) Adjustment of Insurance During Operations
- o) Adjustment of Reference Tariff Table

The mechanism for cost adjustments on account of the above factors is discussed in the following paragraphs.

11.1 Adjustment for Sales Tax on EPC onshore

As explained in section 7.3 the Company is making effort to get Sales tax exemption from Federal and AJK Governments and not included the amount of sales tax of US\$ 212.79 Million in the Project Cost. However, it is requested that the same will be allowed by the Authority as part of the Project Cost, based on actual, at the time of COD if exemption is not granted and Company is required to pay sales tax on EPC onshore contract.

11.2 Adjustment for Civil Cost Escalation

Annex H - “Changes in Costs” Clause 1 – “Change in Costs for change civil costs” of the Onshore Contract provide for changes in costs, stating: “The changes in costs shall only be adjusted in local currency portion on the basis of “rise and fall” of the prices of cement, fuel, reinforcement steel and labor obtained and utilized by the Contractor in Pakistan with respect to established costs for such resources on the Base Date of the Contract in accordance with the price adjustment formula in Annex H

As provided in Annex H, out of the total cost of Onshore Contract, 60% have been agreed with the contractor to be fixed i.e. no indexations or escalations are permitted against the same. The remaining 40% will be indexed – details regarding indexations applicable on the remaining portion are set out below:

Type	Weightings	
	Permissible Range (%)	Adjustment (%)
a) Fixed Portion	60	60
b) Adjustable Portion	40	40
Labor (L)	7 to 15	14
Fuel (F)	4 to 11	8
Cement (C)	3 to 12	6
Reinforcing Steel (S)	7 to 13	12

The formula by which the indexations are applied is given below:

$$P_n = V_n \times [(C_n - C_o)/C_o] + W_n \times [(S_n - S_o)/S_o] + Y_n \times [(F_n - F_o)/F_o] + Z_n \times [(L_n - L_o)/L_o]$$

$$T_{fn} = T_n + P_n$$

Where:

“P_n” is the adjustment factor to be applied to the estimated value of the work carried out in month “n”

“V”, “W”, “Y”, and “Z” are coefficients representing the estimated proportion of each cost element – cement, reinforcing steel, fuel and labor respectively, in the works;

“L_o”, “F_o”, “C_o”, and “S_o” are the base cost indices or reference prices corresponding to the above cost elements;

“L_n”, “F_n”, “C_n”, and “S_n” are the cost indices or prices corresponding to the above cost elements in month “n”;

T_{nf} is the Total Final Amount for the relevant month n, after adding the Escalated Amount (P_n) to the Total Reference Amount (T_n).

T_n is the Total Reference Amount for the relevant month "n" from Construction Start Date

The reference indices of the specified input cost items as agreed and incorporated in the EPC contract are as under (Annex – 35):

Cost Element	Reference Index	Remarks
Labor (L)	230.48	Applicable index of “Construction Wage Rates” of 7.4 Consumer Price Index Number by Major Groups and Selected Commodities of the published in Monthly Bulletin of Statistics of November 2016 by Pakistan Bureau of Statistics (PBS)
Fuel (F)	144.34	Applicable index of “Diesel Oil” of 7.9 Index Numbers of Wholesale Prices by Commodities of published in Monthly Bulletin of Statistics of November 2016 by PBS
Cement (C)	212.72	Applicable index of “Cement” of 7.9 Index Numbers of Wholesale Prices by Commodities of published in Monthly Bulletin of Statistics of November 2016 by PBS
Reinforcing Steel (S)	120.20	Applicable index of “Steel Bars & Sheets” of 7.9 Index Numbers of Wholesale Prices by Commodities of published in Monthly Bulletin of Statistics of November 2016 by PBS

Company hereby requests the Authority for adjustment of EPC Cost and Reference Tariff at COD on account of Onshore Contract (EC Contract) cost escalation in accordance with above stated formula.

Month after Notice	Amounts (PKR)					Coefficients				
	Fixed	Labor	Steel	Fuel	Cement	Fixed	Labor	Steel	Fuel	Cement
	PKR	PKR	PKR	PKR	PKR	a	b	c	d	e
1	331,068,507.86	77,249,318.50	66,213,701.57	44,142,467.71	33,106,850.79	0.6	0.14	0.12	0.08	0.06
2	428,701,453.73	100,030,339.20	85,740,290.75	57,160,193.83	42,870,145.37	0.6	0.14	0.12	0.08	0.06
3	563,752,292.24	131,542,201.52	112,750,458.45	75,166,972.30	56,375,229.22	0.6	0.14	0.12	0.08	0.06
4	987,456,257.27	230,406,460.03	197,491,251.45	131,660,834.30	98,745,625.73	0.6	0.14	0.12	0.08	0.06
5	772,750,650.60	180,308,485.14	154,550,130.12	103,033,420.08	77,275,065.06	0.6	0.14	0.12	0.08	0.06
6	812,707,426.34	189,631,732.81	162,541,485.27	108,360,990.18	81,270,742.63	0.6	0.14	0.12	0.08	0.06
7	844,215,040.38	196,983,509.42	168,843,008.08	112,562,005.38	84,421,504.04	0.6	0.14	0.12	0.08	0.06
8	746,594,644.69	174,205,417.09	149,318,928.94	99,545,952.63	74,659,464.47	0.6	0.14	0.12	0.08	0.06
9	703,758,191.48	164,210,244.68	140,751,638.30	93,834,425.53	70,375,819.15	0.6	0.14	0.12	0.08	0.06
10	907,821,143.97	211,824,933.59	181,564,228.79	121,042,819.20	90,782,114.40	0.6	0.14	0.12	0.08	0.06
11	917,822,680.04	214,158,625.34	183,564,536.01	122,376,357.34	91,782,268.00	0.6	0.14	0.12	0.08	0.06
12	1,062,734,018.14	247,971,270.90	212,546,803.63	141,697,869.09	106,273,401.81	0.6	0.14	0.12	0.08	0.06
13	921,407,248.08	214,995,024.55	184,281,449.62	122,854,299.74	92,140,724.81	0.6	0.14	0.12	0.08	0.06
14	709,095,539.55	165,455,625.90	141,819,107.91	94,546,071.94	70,909,553.96	0.6	0.14	0.12	0.08	0.06
15	633,323,173.31	147,775,407.10	126,664,634.66	84,443,089.77	63,332,317.33	0.6	0.14	0.12	0.08	0.06
16	944,233,126.16	220,321,062.77	188,846,625.23	125,897,750.15	94,423,312.62	0.6	0.14	0.12	0.08	0.06
17	551,295,272.34	128,635,563.55	110,259,054.47	73,506,036.31	55,129,527.23	0.6	0.14	0.12	0.08	0.06
18	502,575,645.47	117,267,650.61	100,515,129.09	67,010,086.06	50,257,564.55	0.6	0.14	0.12	0.08	0.06
19	500,926,773.71	116,882,913.87	100,185,354.74	66,790,236.49	50,092,677.37	0.6	0.14	0.12	0.08	0.06
20	508,016,636.58	118,537,215.20	101,603,327.32	67,735,551.54	50,801,663.66	0.6	0.14	0.12	0.08	0.06
21	431,995,261.87	100,798,894.44	86,399,052.37	57,599,368.25	43,199,526.19	0.6	0.14	0.12	0.08	0.06
22	555,946,528.92	129,720,856.75	111,189,305.78	74,126,203.86	55,594,652.89	0.6	0.14	0.12	0.08	0.06
23	633,638,819.80	147,849,057.95	126,727,763.96	84,485,175.97	63,363,881.98	0.6	0.14	0.12	0.08	0.06
24	536,262,833.64	125,127,994.51	107,252,566.73	71,501,711.15	53,626,283.36	0.6	0.14	0.12	0.08	0.06
25	957,594,585.20	223,438,736.55	191,518,917.04	127,679,278.03	95,759,458.52	0.6	0.14	0.12	0.08	0.06
26	852,955,207.76	199,022,881.81	170,591,041.55	113,727,361.04	85,295,520.78	0.6	0.14	0.12	0.08	0.06
27	819,426,999.23	191,199,633.15	163,885,399.85	109,256,933.23	81,942,699.92	0.6	0.14	0.12	0.08	0.06
28	747,949,502.97	174,521,550.69	149,589,900.59	99,726,600.40	74,794,950.30	0.6	0.14	0.12	0.08	0.06
29	749,512,871.28	174,886,336.63	149,902,574.26	99,935,049.50	74,951,287.13	0.6	0.14	0.12	0.08	0.06
30	658,083,084.21	153,552,719.65	131,616,616.84	87,744,411.23	65,808,308.42	0.6	0.14	0.12	0.08	0.06
31	578,307,135.65	134,938,331.65	115,661,427.13	77,107,618.09	57,830,713.57	0.6	0.14	0.12	0.08	0.06
32	559,767,322.65	130,612,375.28	111,953,464.53	74,635,643.02	55,976,732.26	0.6	0.14	0.12	0.08	0.06
33	560,607,191.70	130,808,344.73	112,121,438.34	74,747,625.56	56,060,719.17	0.6	0.14	0.12	0.08	0.06
34	946,491,551.48	220,848,028.68	189,298,310.30	126,198,873.53	94,649,155.15	0.6	0.14	0.12	0.08	0.06
35	909,165,916.42	212,138,713.83	181,833,183.28	121,222,122.19	90,916,591.64	0.6	0.14	0.12	0.08	0.06
36	928,628,752.19	216,680,042.18	185,725,750.44	123,817,166.96	92,862,875.22	0.6	0.14	0.12	0.08	0.06
37	1,162,080,592.35	271,152,138.22	232,416,118.47	154,944,078.98	116,208,059.24	0.6	0.14	0.12	0.08	0.06
38	717,340,347.84	167,379,414.50	143,468,069.57	95,645,379.71	71,734,034.78	0.6	0.14	0.12	0.08	0.06
39	566,084,412.30	132,086,362.87	113,216,882.46	75,477,921.64	56,608,441.23	0.6	0.14	0.12	0.08	0.06
40	643,968,574.21	150,259,333.98	128,793,714.84	85,862,476.56	64,396,857.42	0.6	0.14	0.12	0.08	0.06
41	583,287,240.21	136,100,356.05	116,657,448.04	77,771,632.03	58,328,724.02	0.6	0.14	0.12	0.08	0.06
42	584,381,769.91	136,355,746.31	116,876,353.98	77,917,569.32	58,438,176.99	0.6	0.14	0.12	0.08	0.06
43	663,617,834.22	154,844,161.32	132,723,566.84	88,482,377.90	66,361,783.42	0.6	0.14	0.12	0.08	0.06
44	590,214,371.79	137,716,686.75	118,042,874.36	78,695,249.57	59,021,437.18	0.6	0.14	0.12	0.08	0.06
45	672,581,618.82	156,935,711.06	134,516,323.76	89,677,549.18	67,258,161.88	0.6	0.14	0.12	0.08	0.06
46	664,598,019.88	155,072,871.31	132,919,603.98	88,613,069.32	66,459,801.99	0.6	0.14	0.12	0.08	0.06
47	674,378,832.21	157,355,060.85	134,875,766.44	89,917,177.63	67,437,883.22	0.6	0.14	0.12	0.08	0.06
48	713,334,868.03	166,444,802.54	142,666,973.61	95,111,315.74	71,333,486.80	0.6	0.14	0.12	0.08	0.06
49	878,054,372.66	204,879,353.62	175,610,874.53	117,073,916.36	87,805,437.27	0.6	0.14	0.12	0.08	0.06
50	481,155,799.70	112,269,686.60	96,231,159.94	64,154,106.63	48,115,579.97	0.6	0.14	0.12	0.08	0.06
51	477,685,007.48	111,459,835.08	95,537,001.50	63,691,334.33	47,768,500.75	0.6	0.14	0.12	0.08	0.06
52	540,785,368.00	126,183,252.53	108,157,073.60	72,104,715.73	54,078,536.80	0.6	0.14	0.12	0.08	0.06
53	422,296,216.77	98,535,783.91	84,459,243.35	56,306,162.24	42,229,621.68	0.6	0.14	0.12	0.08	0.06
54	285,160,622.36	66,537,478.55	57,032,124.47	38,021,416.31	28,516,062.24	0.6	0.14	0.12	0.08	0.06
55	305,033,218.55	71,174,417.66	61,006,643.71	40,671,095.81	30,503,321.85	0.6	0.14	0.12	0.08	0.06
56	294,227,585.35	68,653,103.25	58,845,517.07	39,230,344.71	29,422,758.54	0.6	0.14	0.12	0.08	0.06
57	315,736,109.51	73,671,758.89	63,147,221.90	42,098,147.93	31,573,610.95	0.6	0.14	0.12	0.08	0.06
58	315,746,717.85	73,674,234.16	63,149,343.57	42,099,562.38	31,574,671.78	0.6	0.14	0.12	0.08	0.06
59	245,533,609.84	57,291,175.63	49,106,721.97	32,737,814.65	24,553,360.98	0.6	0.14	0.12	0.08	0.06
60	333,896,562.40	77,909,197.89	66,779,312.48	44,519,541.65	33,389,656.24	0.6	0.14	0.12	0.08	0.06
61	561,243,772.17	130,956,880.17	112,248,754.43	74,832,502.96	56,124,377.22	0.6	0.14	0.12	0.08	0.06
62	250,799,344.22	58,519,846.98	50,159,868.84	33,439,912.56	25,079,934.42	0.6	0.14	0.12	0.08	0.06
63	241,097,097.03	56,255,989.31	48,219,419.41	32,146,279.60	24,109,709.70	0.6	0.14	0.12	0.08	0.06
64	198,959,493.62	46,423,881.85	39,791,898.72	26,527,932.48	19,895,949.36	0.6	0.14	0.12	0.08	0.06
65	186,823,039.27	43,592,042.50	37,364,607.85	24,909,738.57	18,682,303.93	0.6	0.14	0.12	0.08	0.06
66	201,089,872.06	46,920,970.15	40,217,974.41	26,811,982.94	20,108,987.21	0.6	0.14	0.12	0.08	0.06
67	135,405,235.01	31,594,554.84	27,081,047.00	18,054,031.33	13,540,523.50	0.6	0.14	0.12	0.08	0.06
68	158,572,816.88	37,000,323.94	31,714,563.38	21,143,042.25	15,857,281.69	0.6	0.14	0.12	0.08	0.06
69	163,449,280.09	38,138,165.35	32,689,856.02	21,793,237.35	16,344,928.01	0.6	0.14	0.12	0.08	0.06
70	127,693,391.95	29,795,124.79	25,538,678.39	17,025,785.59	12,769,339.20	0.6	0.14	0.12	0.08	0.06
71	82,155,719.36	19,169,667.85	16,431,143.87	10,954,095.91	8,215,571.94	0.6	0.14	0.12	0.08	0.06
72	266,145,059.94	62,100,513.99	53,229,011.99	35,486,007.99	26,614,505.99	0.6	0.14	0.12	0.08	0.06
73	344,731,986.83	80,437,463.59	68,946,397.37	45,964,264.91	34,473,198.68	0.6	0.14	0.12	0.08	0.06
74	149,063,373.12	34,781,453.73	29,812,674.62	19,875,116.42	14,906,337.31	0.6	0.14	0.12	0.08	0.06
75	74,538,144.29	17,392,233.67	14,907,628.86	9,938,419.24	7,453,814.43	0.6	0.14	0.12	0.08	0.06
76	117,362,477.31	27,384,578.04	23,472,495.46	15,648,330.31	11,736,247.73	0.6	0.14	0.12	0.08	0.06
77	61,924,339.04	14,449,012.44	12,384,867.81	8,256,578.54	6,192,433.90	0.6	0.14	0.12	0.08	0.06
78	1,112,847,098.17	259,664,435.59	222,569,516.22	148,379,677.48	111,284,758.11	0.6	0.14	0.12	0.08	0.06
Total	43,341,670,499.51	10,113,056,562.56	8,668,334,196.48	5,778,889,464.32	4,334,167,098.25					

11.3 Adjustment for Cost variation due to change in Rock classification

Annex H - “Changes in Costs” Clause 2 – “Change in Rock Classification” of the onshore Contract states that “The prices of tunnels will be adjusted according to the change in rock classification assumed at the stage of signing of the EPC Onshore Contract and actually encountered at execution stage. However, the total quantities shall not be varied and remained fixed as on signing of the EPC Onshore Contract”.

The cost for tunnels is based on the assumption that the rock classification encountered at each tunnel will be as follows:

Hydraulic Tunnel - Classification of Underground Conditions

No.	Q-value	Length Assumed (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10	1,044.18	818,495.42	854,660,474.89
2	10> Q > 4	1,932.25	878,177.38	1,222,639,290.47
3	4> Q > 1	6,961.23	910,801.09	6,340,297,676.51
4	1>Q>0.1	11,486.03	987,790.65	11,345,795,842.18
5	0.1 > Q > 0.01	12,182.16	1,442,543.73	17,573,292,695.36
6	Q < 0.01	1,740.31	2,885,873.61	5,022,308,936.80
Total		34,806.16		42,358,994,916.21

Surge Chamber - Classification of Underground Conditions

No.	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		3,698,908.76	
2	10> Q > 4		3,813,308.00	
3	4> Q > 1	156.6	3,931,245.36	615,633,023.1
4	1>Q>0.1	130.5	4,345,060.66	567,030,416.01
5	0.1 > Q > 0.01	208.8	6,599,669.18	1,378,010,925.56
6	Q < 0.01	26.1	7,718,987.64	201,465,577.36
Total		522.0		2,762,139,942.03

Penstock- Classification of Underground Conditions

No.	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10	40.72	711,893.02	28,990,561.90
2	10> Q > 4	61.08	733,910.33	44,830,765.83
3	4> Q > 1	407.23	756,608.59	308,115,229.06
4	1>Q>0.1	610.85	822,977.76	502,714,321.10
5	0.1 > Q > 0.01	712.66	934,663.00	666,093,196.97
6	Q < 0.01	203.62	1,211,287.79	246,637,574.38
Total		2,036.16		1,797,381,649.25

1# Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		326,218.11	
2	10> Q > 4		336,307.33	
3	4> Q > 1	66.60	346,708.59	23,090,792.06
4	1>Q>0.1	83.25	383,204.23	31,901,752.18
5	0.1 > Q > 0.01	149.85	1,545,257.83	231,556,885.12
6	Q < 0.01	33.3	1,962,916.7	65,365,126.10
Total		333.00		351,914,555.46

2#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$	34.32	275,229.02	9,445,859.97
2	$10 > Q > 4$	68.64	304,200.50	20,880,322.04
3	$4 > Q > 1$	377.52	377,105.80	142,364,983.16
4	$1 > Q > 0.1$	320.32	416,801.15	133,509,744.97
5	$0.1 > Q > 0.01$	251.68	1,671,235.20	420,616,474.23
6	$Q < 0.01$	91.52	2,128,751.39	194,823,327.55
Total		1,144.00		921,640,711.93

3#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$	42.92	279,024.49	11,975,731.27
2	$10 > Q > 4$	64.38	308,395.49	19,854,501.85
3	$4 > Q > 1$	300.44	383,249.06	115,143,348.97
4	$1 > Q > 0.1$	268.25	423,591.07	113,628,304.91
5	$0.1 > Q > 0.01$	321.90	1,261,424.03	406,052,396.50
6	$Q < 0.01$	75.11	2,165,903.05	162,680,977.80
Total		1,073.00		829,335,261.29

4#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$	53.91	290,020.63	15,635,012.14
2	$10 > Q > 4$	65.89	320,549.12	21,120,981.31
3	$4 > Q > 1$	149.75	398,538.94	59,681,206.30
4	$1 > Q > 0.1$	119.80	440,490.41	52,770,750.83
5	$0.1 > Q > 0.01$	179.70	1,313,477.26	236,031,863.98
6	$Q < 0.01$	29.95	2,255,336.65	67,547,332.67
Total		599.00		452,787,147.24

5# Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$		331,529.09	
2	$10 > Q > 4$		366,426.89	
3	$4 > Q > 1$	7.1	466,070.69	9,916,170.67
4	$1 > Q > 0.1$	91.8	515,130.76	47,289,003.79
5	$0.1 > Q > 0.01$	91.8	2,204,831.78	202,403,557.40
6	$Q < 0.01$	15.3	2,744,681.29	41,993,623.81
Total		306		341,602,355.68

5-1#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$		331,529.09	
2	$10 > Q > 4$		366,426.89	
3	$4 > Q > 1$	18.55	466,070.69	8,645,611.26
4	$1 > Q > 0.1$	15.90	515,130.76	8,190,579.09
5	$0.1 > Q > 0.01$	15.90	2,204,831.78	35,056,825.30
6	$Q < 0.01$	2.65	2,744,681.29	7,273,405.43
Total		53.00		59,166,421.08

6#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		445,549.86	
2	10> Q > 4		459,329.76	
3	4> Q > 1	93.10	473,535.83	44,086,185.93
4	1>Q>0.1	79.80	523,381.71	41,765,860.36
5	0.1 > Q > 0.01	79.80	2,451,250.49	195,609,788.91
6	Q < 0.01	13.30	3,031,995.09	40,325,534.74
Total		266.00		321,787,369.94

6-1#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		445,549.86	
2	10> Q > 4		459,329.76	
3	4> Q > 1	40.95	473,535.83	19,391,292.31
4	1>Q>0.1	35.10	523,381.71	18,370,697.98
5	0.1 > Q > 0.01	35.10	2,451,250.49	86,038,892.12
6	Q < 0.01	5.85	3,031,995.09	17,737,171.30
Total		117.00		141,538,053.69

7#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		302,434.51	
2	10> Q > 4		311,788.15	
3	4> Q > 1	40.65	321,431.08	13,066,173.54
4	1>Q>0.1	40.65	355,265.93	14,441,560.22
5	0.1 > Q > 0.01	176.15	1,089,893.36	191,984,716.13
6	Q < 0.01	13.55	1,870,736.28	25,348,476.63
Total		271.00		244,840,926.52

8#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		349,932.44	
2	10> Q > 4		360,755.09	
3	4> Q > 1	121.85	371,912.47	45,317,534.30
4	1>Q>0.1	121.85	411,061.15	50,087,801.07
5	0.1 > Q > 0.01	219.33	1,251,014.53	274,385,016.46
6	Q < 0.01	24.37	2,127,569.85	51,848,877.24
Total		487.4		421,639,229.07

8-1#Adit - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	Q >10		349,744.54	
2	10> Q > 4		360,561.38	
3	4> Q > 1	36.03	371,712.77	13,390,952.42
4	1>Q>0.1	36.03	410,840.43	14,800,526.36
5	0.1 > Q > 0.01	64.85	1,251,039.96	81,123,686.34
6	Q < 0.01	7.21	2,125,916.53	15,317,228.61
Total		144.10		124,632,393.73

Tailrace - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$		1,463,034.70	
2	$10 > Q > 4$		1,508,283.20	
3	$4 > Q > 1$	14.80	1,554,931.13	23,013,993.91
4	$1 > Q > 0.1$	59.20	1,657,229.24	98,112,289.83
5	$0.1 > Q > 0.01$	162.80	1,981,888.30	322,644,958.02
6	$Q < 0.01$	59.20	2,592,747.23	153,490,635.92
Total		296.00		597,261,877.69

Diversion tunnel - Classification of Underground Conditions

Class	Q-value	Length Encountered (m)	Unit Rate PKR/ meter Length	Cost of Construction PKR
1	$Q > 10$		1,439,558.64	
2	$10 > Q > 4$		1,484,081.07	
3	$4 > Q > 1$	83.25	1,529,980.49	127,370,875.49
4	$1 > Q > 0.1$	86.58	1,664,189.30	144,085,509.67
5	$0.1 > Q > 0.01$	153.18	2,181,712.02	334,194,647.85
6	$Q < 0.01$	9.99	2,910,550.36	29,076,398.11
Total		333.00		634,727,431.13

The unit rates specified in the above tables would also be subject to adjustment in accordance with the formula for Civil works cost escalations specified in section 6.1 “Adjustment for Civil Cost Escalation above. As per the provisions of the PPA Re-opener verifier will be appointed who will be responsible to authorize variation, deliver opinion, certification and carry out estimation or valuation. The terms of reference of the Re-Opener Verifier shall include but not limited to monitoring and evaluation of any cost variations due to geological conditions limited to the tunnel area, cost escalations in the civil works associated with construction and re-settlement costs.

Company requests that the adjustments as proposed above may be allowed. Company will submit necessary details supported by the reports issued by the Re-opener verifier and any document required in this respect to NEPRA after COD for adjustment in Project cost and the Reference Tariff for Cost reopeners.

11.4 Adjustment for variation in Cost of Land Acquisition and Resettlement

An amount of US\$ 51.92 for Land Acquisition and Re-settlement is included in the Project Cost estimates to cater for the Land acquisition and resettlement. However as per the NEPRA mechanism for determination of tariff for hydropower projects this cost will be adjusted based on the actual verifiable documentary evidence at the Commercial Operations Date.

11.5 Adjustment Project Cost due to variation in US\$ / Rupee parity

Any variation in the Project Cost during construction period on account of variation in US\$ / Rupee parity shall be allowed through adjustment in Project Cost based on production of verifiable documentary evidence to the satisfaction to NEPRA.

11.6 Adjustment in Project Cost based on actual Interest during construction

Interest during construction has been estimated as US\$ 421.05 million based on key terms of financing and the estimated debt injections schedule. This will be adjusted at the Commercial operations date as per the actual debt injections pattern, variation in PKR/US\$, debt drawn and applicable KIBOR & LIBOR during the construction period allowed by NEPRA.

11.7 Adjustment for variation in Duties & Taxes

Duties and taxes are estimated at US\$ 28.51 million. The duties and taxes paid on the imported plant & machinery and other applicable taxes, GOP levies, provincial levies, AJK taxes and levies and other charges imposed on the Company, which are non-refundable in nature will be adjusted on actual basis on production of verifiable documentary evidence by the Company to the satisfaction of NEPRA.

11.8 Adjustment in Principal Repayment and cost of Debt

The Reference Principal Repayment Component and the cost of debt will be adjusted at the Commercial Operations Date as per the actual debt composition between Local & Foreign and variation in KIBOR & LIBOR at the Commercial Operations Date.

11.9 Adjustment of Insurance Cost

Insurance during Construction will be adjusted at the Commercial Operations date based on actual subject to the maximum of 3% of the adjusted and approved EPC cost upon production of verifiable documentary evidence to the satisfaction of NEPRA.

11.10 Adjustment of Security Cost

Security cost of 1% as per the Ministry of water and power Ref IPPS-1(12)/2016 dated October 10, 2016 is not included in the Project Cost due to lack of clarity. However, if the Company is required to incur this cost the same will be claimed in the Project Cost for the cost related to construction period and O&M cost for the cost related to operations period.

11.11 Adjustment of Sinosure fee

Sinosure on Debt has been calculated using assumptions of Buyer's credit based on upfront cost at 8.75% (inclusive of 20% withholding tax). In case of any change in assumptions NEPRA will allow based on actual documentary evidence provided by the Company and will be adjusted on the Commercial Operations Date.

Sinosure on Equity has been calculated using assumptions of overseas Investment Insurance policy at 0.59% per annum (inclusive of 20% withholding tax). In case of any change in assumptions NEPRA will allow based on actual documentary evidence provided by the Company and will be adjusted on the Commercial Operations Date.

11.12 Adjustment in Reference Return on Equity and Reference Return on Equity during construction

Reference Return on Equity and Reference Return on Equity during Construction will be adjusted at Commercial Operation Date on the basis of Actual equity injections and PKR/US\$ variation (within the overall equity allowed by the NEPRA at the Commercial Operations Date) during the Construction period allowed by NEPRA.

11.13 Adjustment for Financial Fees and Charges

Financial Fees and Charges will be adjusted at the Commercial Operations Date on the basis of actual subject to the maximum of 3% of the total debt allowed (excluding impact of interest during construction, Sinasure Fee and financial charges) upon production of verifiable documentary evidence to the satisfaction of NEPRA.

11.14 Adjustment for Insurance during Operations

Insurance cost for the operational period will be adjusted on the basis of actual, subject to maximum of 1.35% of the EPC costs at Commercial Operations Date on production of verifiable documentary evidence by the Company.

11.15 Adjustment of Reference Tariff Table

The Reference Tariff Table shall be revised at Commercial Operations Date which taking into account the above adjustments. The Company shall submit its request to CPPAG/NEPRA at Commercial Operations Date for necessary adjustment in the Reference Tariff.

Section 12: Indexations & Adjustments

It is submitted that indexations be made on 1st January, 1st April, 1st July and 1st October respectively, on the basis of latest information available with respect to Consumer Price Index (CPI) (General), as notified by Pakistan Bureau of Statistics, US CPI (for all Urban-consumer) as notified by US Bureau of Labor Statistics and exchange rate as notified by National Bank of Pakistan.

Following are the indexation factors that shall be determined by NERPA from time to time

- a) Quarterly Adjustment of Exchange Rate Variation
- b) Quarterly adjustment for Local inflation based on CPI
- c) Quarterly adjustment for Foreign inflation based on CPI
- d) Semi Annual Adjustment in KIBOR & LIBOR
- e) Annual Adjustment in Insurance component for actual insurance paid

12.1 Water Use Charge

Indexation on the Water Use Charges will be as per the ECC decision dated July 1, 2016, which states, Water use charges will be reviewed every five (5) years to determine if an increase is required. Any subsequent change in rate of Water Use Charges as notified by the relevant Government Agency is requested to be allowed to the Company by Authority on actual basis.

12.2 Foreign Variable O&M Cost Component

The Reference Foreign Variable O&M Cost Component of the Variable O&M Cost shall be quarterly indexed to both:

- (a) The USD/PKR exchange rate, based on the revised TT & OD selling rate of USD as notified by the National Bank of Pakistan; and
- (b) US CPI (for all Urban-consumer), as issued by the US Bureau of Labor Statistics.

The applicable formula shall be as follows:

$$\mathbf{VO\&M_{(FRev)} = Reference\ Generation\ Tariff\ Component *}$$

$$(\mathbf{US\ CPI_{(Rev)} / US\ CPI_{(Ref)}}) * (\mathbf{FX\ USD_{(Rev)} / FX\ USD_{(Ref)}})$$

Where:

$$\mathbf{VO\&M_{(FRev)} = \quad the\ revised\ Foreign\ Variable\ O\&M\ Cost}$$

Component applicable for the relevant quarter

US CPI_(Rev) = the revised average US CPI (for all Urban-consumers) for the quarter prior to the quarter in which indexation is applicable, as issued by the US Bureau of Labor Statistics

US CPI_(Ref) = the US CPI (for all Urban-consumers) for the month of March 2017 i.e. 243.801, as issued by the US Bureau of Labor Statistics (Annex 36).

FX USD_(Rev) = the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.

FX USD_(Ref) = TT & OD selling rate of PKR/USD, prevailing on March 31st, 2017 i.e. 104.85 as notified by the National Bank of Pakistan (Annex -37)

12.3 Local Variable O&M Cost Component

The Reference Local Variable O&M Cost Component of the Variable O&M Cost shall be quarterly indexed to the CPI (General) in Pakistan, as notified by the Pakistan Bureau of Statistics based on the following formula:

$$VO\&M_{(LRev)} = \text{Reference Generation Tariff Component} * \left(\frac{CPI_{(Rev)}}{CPI_{(Ref)}} \right)$$

Where:

VO&M_(LRev) = the revised Local Variable O&M Cost Component applicable for the relevant quarter

CPI_(Rev) = the revised CPI (General) in Pakistan for the month prior to the month in which indexation is applicable, as notified by the Federal Bureau of Statistics.

CPI_(Ref) = the CPI (General) in Pakistan for the month of March 2017 i.e. 213.32 as notified by the Federal Bureau of Statistics (Annex – 38).

12.4 Local Fixed O&M Cost Component

The Reference Local Fixed O&M Cost Component shall be quarterly indexed to the CPI (General) in Pakistan, as notified by the Pakistan Bureau of Statistics based on the following formula:

$$LFO\&M_{(LRev)} = \text{Reference Generation Tariff Component} * \left(\frac{CPI_{(Rev)}}{CPI_{(Ref)}} \right)$$

Where:

LFO&M_(LRev) = the revised Local Fixed O&M Cost Component applicable for the relevant quarter

CPI_(Rev) = the revised CPI (General) in Pakistan for the month prior to the month in which indexation is applicable, as notified by the Pakistan Bureau of Statistics.

CPI_(Ref) = the CPI (General) in Pakistan for the month of March 2017 i.e. 213.32, as notified by the Pakistan Bureau of Statistics.

12.5 Foreign Fixed O&M Cost Component

The Reference Foreign Fixed O&M Cost Component shall be quarterly indexed to both:

- (a) the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan; and
- (b) the US CPI (for all Urban-consumers), issued by the US Bureau of Labor Statistics .

The applicable formula shall be as follows:

$$FO\&M_{(Rev)} = \text{Reference Generation Tariff Component} *$$

$$(\text{US CPI}_{(Rev)} / \text{US CPI}_{(Ref)}) * (\text{FX USD}_{(Rev)} / \text{FX USD}_{(Ref)})$$

Where:

$FFO\&M_{(Rev)}$	=	the revised Foreign Fixed O&M Cost Component, applicable for the relevant quarter
$US\ CPI_{(Rev)}$	=	the revised US CPI (for all Urban-consumers) for the month prior to the month in which indexation is applicable, issued by US Bureau of Labor Statistics.
$US\ CPI_{(Ref)}$	=	the US CPI (for all Urban-consumers) for the month of March 2017 i.e. 243.801, as issued by US Bureau of Labor Statistics.
$FX\ USD_{(Rev)}$	=	the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.
$FX\ USD_{(Ref)}$	=	TT & OD selling rate of PKR/USD, as notified by the National Bank of Pakistan on March 31, 2017 i.e. Rs 104.85 / USD.

12.6 Insurance Cost

The Reference Insurance Cost Component shall be annually indexed to USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

- (a) Indexation Formula

The indexation of the Insurance Cost Component shall be based on the following formula:

$$\text{Insurance}_{(Rev)} = \text{Relevant Reference Generation Tariff Component} *$$

$$(\text{FX USD}_{(Rev)} / \text{FX USD}_{(Ref)})$$

Where:

Insurance _(Rev) =	the revised Insurance Cost Component applicable for the relevant year
FX USD _(Rev) =	the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.
FX USD _(Ref) =	TT & OD selling rate of PKR/USD, prevailing on March 31 st 2017 i.e. 104.85 as notified by the National Bank of Pakistan

12.7 Return on Equity, Return on Equity during Construction and Equity Redemption

In line with NEPRA's previous determinations, the ROE, ROEDC, and ER Component of the Reference Generation Tariff shall be quarterly indexed to the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

$$\text{ROE}_{(\text{Rev})} = \text{Reference Generation Tariff Component} * (\text{FX USD}_{(\text{Rev})} / \text{FX USD}_{(\text{Ref})})$$

$$\text{ROE-DC}_{(\text{Rev})} = \text{Reference Generation Tariff Component} * (\text{FX USD}_{(\text{Rev})} / \text{FX USD}_{(\text{Ref})})$$

$$\text{ER}_{(\text{Rev})} = \text{Reference Generation Tariff Component} * (\text{FX USD}_{(\text{Rev})} / \text{FX USD}_{(\text{Ref})})$$

Where:

ROE _(Rev) =	the revised ROE component applicable for the relevant quarter
ROE-DC _(Rev) =	the revised ROE-DC component applicable for the relevant quarter
ER _(Rev) =	the revised ROE-DC component applicable for the relevant quarter
FX USD _(Rev) =	the revised TT & OD selling rate of PKR/USD as on the date on which indexation is applicable, as notified by the National Bank of Pakistan.
FX USD _(Ref) =	TT & OD selling rate of PKR/USD, prevailing on March 31 st 2017 i.e. 104.85 as notified by the National Bank of Pakistan

12.8 Principal Component – Foreign Loan

In line with NEPRA's previous determinations, the Principal Component of the foreign loan shall be semiannually indexed to the USD/PKR exchange rate, based on the revised TT & OD selling rate of USD notified by the National Bank of Pakistan.

The applicable formula shall be as follows:

$$\text{PrinRepayment}_{(\text{Rev})} = \text{PrinRepayment}_{(\text{Ref})} * (\text{FX USD}_{(\text{Rev})} / \text{FX USD}_{(\text{Ref})})$$

Where:

PrinRepayment _(Ref) =	the reference Principal Repayment Component for the agreement year
FX USD _(Rev) =	the revised TT & OD selling rate of PKR/USD as on

$$\text{FX USD}_{(\text{Ref})} = \begin{array}{l} \text{the date on which indexation is applicable, as notified} \\ \text{by the National Bank of Pakistan.} \\ \text{TT \& OD selling rate of PKR/USD, prevailing on} \\ \text{March 31}^{\text{st}} \text{ 2017 i.e. 104.85 as notified by the National Bank of} \\ \text{Pakistan} \end{array}$$

12.9 Interest Charges – Foreign Loan

The interest part of fixed charge component will remain unchanged throughout the term except for the adjustment due to exchange rate variation and variation in 6 months LIBOR, while spread of 4.60% on LIBOR remaining the same, according to the following formula:

$$I = P_{(\text{Rev})} * (\text{LIBOR}_{(\text{Rev})} - \text{LIBOR}_{(\text{Ref})})/2$$

Where:

ΔI = the variation in interest charges applicable corresponding to variation in six-month LIBOR. ΔI can be positive or negative depending upon whether $\text{LIBOR}_{(\text{Rev})} >$ or $< \text{LIBOR}_{(\text{Ref})}$. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment applicable on bi-annual basis.

$P_{(\text{Rev})}$ = the outstanding principal on a semi-annual basis at the relevant calculation dates.

12.10 Interest Charges – Local Loan

The interest part of fixed charge component will remain unchanged throughout the term except for variation in 6 months KIBOR, while spread of 3.50% on KIBOR remaining the same, according to the following formula:

$$\Delta I = P_{(\text{Rev})} * (\text{KIBOR}_{(\text{Rev})} - \text{KIBOR}_{(\text{Ref})})/2$$

Where:

ΔI = the variation in interest charges applicable corresponding to variation in six-month KIBOR. ΔI can be positive or negative depending upon whether $\text{KIBOR}_{(\text{Rev})} >$ or $< \text{KIBOR}_{(\text{Ref})}$. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each period under adjustment applicable on bi-annual basis.

$P_{(\text{Rev})}$ = the outstanding principal on a semi-annual basis at the relevant calculation dates.

12.11 Adjustment due to Variation in Net Capacity

The Reference Generation Tariff for CPP has been determined on the basis of net capacity of 1,112.8 MW. It is requested that the CPP components be adjusted at the time of COD based upon the Initial Dependable Capacity (IDC) test to be carried out for determination of Contract Capacity (as defined under the PPA).

We would request NEPRA to adjust the CPP components based on the following formula:

$$CC_{(\text{Adj})} = CC_{(\text{Ref})} \times 1,112.8 \text{ MW} / NC_{(\text{IDC})}$$

Where:

$CC_{(Adj)}$	=	Adjusted relevant CCP component of tariff
$CC_{(Ref)}$	=	Reference relevant CCP component of tariff
$NC_{(Adj)}$	=	Net Capacity at reference site conditions established at the time of IDC test.

Section 13: Pass through items

Pass-through items shall be payable by the Power Purchaser to the Company on the basis of the actual costs reasonable incurred by the Company to satisfy the requirements of the Power Purchase agreement & applicable laws of Pakistan. The following items shall be Pass-Through items.

Withholding Tax on Dividend

Withholding tax on dividend shall be treated as pass through item. Withholding tax shall be paid at the rate of 7.5% of the return on equity (including return on equity during construction). The power purchaser shall make payment on account of withholding tax at the time of actual payment of dividend subject to maximum of 7.5% of 17% return on equity according to the following formula:

$$\text{Withholding tax payable} = [17\% * (E_{\text{Ref}} - E_{\text{Red}})] + \text{ROEDC}_{\text{Ref}} \times 7.5\%$$

Where:

E_{Ref} = Adjusted Reference Equity at COD

E_{Red} = Equity Redeemed

E_{Ref} = Adjusted Reference Return on Equity during Construction

In case the Project does not declare a dividend in any particular year or only declares a partial dividend, then the difference in the withholding tax amount (between what has been paid in that year and total entitlement as per net return on equity) would be carried forward and accumulated so that the Company is able to recover the same as pass through item from power purchaser in future on the basis of total dividend payout.

- a) No withholding tax on dividend has been included in the tariff. Authority is requested to allow payment of withholding tax on dividend as pass through at the time of actual payment of dividend.
- b) The payments to Workers Welfare Fund and Workers Profit Participation Fund have not been accounted for in the Project budget and have been assumed to be reimbursed as pass through at actual by the power purchaser.
- c) Zakat deduction on dividends as required under Zakat Ordinance is considered as a pass through;
- d) No tax on income of KHCL (including proceeds against sale of electricity to CPPA/NTDC) has been assumed. Corporate tax, minimum tax, Alternate Corporate Tax, General sales tax / provincial sales tax and all other taxes, excise duty, levies, fees etc. by any federal / provincial entity including local bodies as and when imposed, shall be treated as a pass through item;
- e) Any Excise Duty other Duty, levy, charge, surcharge or other impositions under the applicable laws whether AJ&K, Provincial or Federal not considered in the tariff will be a pass through under the PPA
- f) No AJK taxes such as Education Cess, which payable in AJK @10% of Tax liability, have been assumed in the tariff petition. In case Project is required to pay any such taxes, same shall be treated as a pass through item;
- g) No hedging cost is assumed for exchange rate fluctuations during construction and all cost overruns resulting from variations in the exchange rate during construction shall be allowed as pass through;
- h) Any costs incurred by Project Company, which are required to be incurred by Power Purchaser pursuant to provisions of PPA shall also be treated as pass through.

- i) Except above-mentioned items in this sub-clause a, any other taxes and charges that constitute as part of the Project Cost, no matter during construction period and operation period, shall be treated as pass through.
- j) If the Company is required to make payment of withholding tax on sinosure and debt servicing the same shall be treated as Pass-through item. The Power Purchaser shall reimburse to the Company the actual amount paid on account of withholding tax.
- k) If the Petitioner is required to make payment on account of Water Utilization Cess to IRSA on total units delivered basis at Paisa 0.50/kWh or other rate as determined, the same shall be treated as Pass through cost of the Petitioner and shall be reimbursed by the Power Purchaser on the basis of actual payment made by the Petitioner after verification of documentary evidence.
- l) Cost incurred or suffered by the Company for any change in general Assumptions as provided in Section 14 below.

Section 14: General Assumptions

The proposed Reference Tariff is based on the following assumptions. A change in any of these assumptions will necessitate a corresponding adjustment in the Reference Tariff:

- a) Debt for the Project will be sourced through a mix of foreign and local financial institutions. Exact composition of debt i.e. local: foreign will be finalized prior to financial close; adjustment against the same will be requested at the time of COD;
- b) An exchange rate of PKR 104.85 /USD has been assumed. Indexation against PKR / USD variations will be permitted for debt servicing payments and all other project costs denominated in foreign currency. Tariff components shall be respectively indexed for exchange rate variations
- c) The timing of drawdown of debt and equity may vary from those specified in this Petition; as such, the Project Cost will be adjusted on the basis of actual IDC at COD. Similarly, ROEDC component will also be updated in the Reference Tariff;
- d) Similarly, adjustments in Project Cost due to variation in PKR / USD variations and KIBOR (if applicable) / LIBOR fluctuations will also be catered for at the time of COD;
- e) Taxes & Custom duties amounting to US\$ 28.51 Million have been assumed on import of plant and equipment under 2002 Generation Policy will be adjusted as per actual payment at COD;
- f) Withholding tax at 7% on supplies pursuant to the Onshore Contract has been catered for under the Project Cost. No withholding tax is anticipated on the Offshore Contract. In case there is any change in taxes etc., or additional taxes, fees, excise duty, levies, etc. are imposed, the EPC cost and ultimately the Project cost and the Reference Tariff will need to be adjusted accordingly;
- g) General sales tax and provincial sales tax on services are applicable at the current prevailing rate of 16% as per AJK services sales tax laws and 17% on supplies as per Pakistan and AJK Sales Tax Laws. However, as explained in section 7.3 we have not included Sales tax on Onshore contract and no sales tax is anticipated and included in the Offshore Contract. In case there is any change, the EPC cost, Project cost and the Reference Tariff will need to be adjusted accordingly as and when notified by the relevant authority.
- h) The Power Purchaser will compensate for energy delivered to the power purchaser prior to COD. For this purpose Energy Purchase Price shall be paid for all energy delivered prior to COD. Payments will be invoiced to the power purchaser as per mechanism specified in the PPA;
- i) The Power Purchaser shall be solely responsible for the financing, engineering, procurement, construction, testing and commissioning of the interconnection and transmission facilities at the prescribed time and dates. Said facilities will be made available to the Project at least on or before the deadline set in the Power Purchase Agreement. Furthermore, the power purchaser will be solely responsible for operation and maintenance of the interconnection and transmission facilities;
- j) Hydrological risk will be borne by the Power Purchaser;
- k) Change in taxes will be borne by GoAJK and or GOP;
- l) The Power Purchase Agreement will be structured as a take-or-pay contract whereby the Capacity Purchase Price will be payable to the Project Company regardless of actual dispatch levels;
- m) Water Use Charge and its indexation will be in accordance with Power Policy, 2002 as amended

from time to time, and the Water Use Agreement signed between the Project Company and the AJK Government;

- n) In case of any unintentional error or omissions, typographic errors, and any genuine assumption being overlooked, the same will be corrected/incorporated and advised to CPPAG or NEPRA as soon as the Project Company becomes aware of it;
- o) Security cost of 1% as per the Ministry of Water and Power Ref IPPS-1(12)/2016 dated October 10, 2016 (Annex – 39) is not included in the project cost due to lack of clarity. However, if company is required to incur this cost the same will be claimed in the project cost for the cost related to construction period and O&M cost for the cost related to operations period.
- p) Any additional indexation or concession allowed by the GOP, NEPRA or any other Govt. entity to any IPP will be allowed to KHCL without any discrimination.